trends

in education

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trends in education

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The opinions expressed in *Trends in Education* are those of the writers and do not necessarily reflect the views of the Department of Education and Science.
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Talking Points

And farewell goes out sighing*

With this issue *Trends* takes its leave – of readers old and new. The authors of the introductory remarks in the first issue – published in January 1966 – had a simple task compared with that facing the writers of this commentary: it is much easier to celebrate a birth than compose an epitaph. *Trends* had its debut at a time when (to quote the inaugural issue) the education service was 'in the grip of three considerable forces' arising from the sheer growth in numbers to be educated (sic); social, economic and technological pressures; and the accelerating pace of the accumulation of knowledge. Its architects believed that such a journal could help educationists rise to the challenge these forces presented, and complimentary comments made over the years by readers and leading figures in the world of education at home and overseas suggest that their contention was well founded.

Incorporating the word 'trends' in the title, in the first place, imposed a great discipline on the journal's editors and writers. No repository this for a rehash of worn ideas – the journal had to strive to be up-to-date, so that it reflected the thinking, developments and innovations likely to have a significant impact on teaching methods and educational administration in the years ahead. To become and stay equal to the challenge thus presented, the editors, and their advisers, had to keep open minds: opinion from within the Department of Education and Science and HM Inspectorate, and from readers and the world of education at large, coloured their judgment and sharpened their awareness of their responsibility when each successive issue was planned.

A study of the journal's content since its inception shows how closely it has mirrored the principal educational preoccupations of, roughly, the last decade and a half. None of the major topics has failed to find a place in this forum, and among many collections of special articles were memorable contributions marking the centenary of the passing of the Education Act of 1870 and Britain's accession to the European Community in 1973.

But in the years since 1966 there has been something of an information explosion. The number of educational periodicals, books and other publications produced by the private and public sectors has grown apace. (Not to mention the growth in newer ways of disseminating information.) Thus many new platforms have been created where the emerging trends and mainstream educational issues could be analysed and debated. The DES has played a major role in this mushrooming publishing activity. (Recent new series include HM Inspectorate's 'Matters for Discussion' and the DES Statistical Bulletins.)

Against this background the decision to close *Trends* was taken as part of the major assault on public spending prompted by economic realities, which has necessitated reductions in staff numbers in DES and other Government departments. Its cessation will leave a gap, certainly, but with the present and future publications policy of DES every effort will be made to see that this does not become a yawning chasm.

In signing off finally we thank readers of long standing for their loyalty and express regret that readers of short duration did not have a longer acquaintance with the journal. Our thanks go also to the many writers and advisers whose tireless efforts have helped us reach and maintain exemplary standards with main articles and book reviews. And whatever their role on the education stage we wish all our readers well in their challenging and all too frequently unappreciated task: equipping young people to cope with the realities and fantasies of the adult world.

THE EDITORS

* *Troilus and Cressida*, Act III, Sc. iii.

Mathematics teaching

Mathematics has been making news. Several major documents have debated the role of this subject in the school curriculum in recent months. Among them are the national secondary survey and its supplement (on mathematics alone); the Finniston report on engineering; and the DES/Welsh Office consultative document on the curriculum, which was followed almost immediately by publication of the paper giving HM Inspectorate's view of the curriculum. Mathematicians were given more to think about by the report outlining the Schools Council's evidence to the Committee of Inquiry into the Teaching of Mathematics in Schools; and the APU's first primary mathematics survey.*

The conclusions and recommendations of these and other recent publications touching on aspects of maths teaching have been widely publicised; and this issue of Trends *makes a contribution to the discussion they have provoked, by presenting four special articles, among them a piece about the significance for mathematicians of the national secondary survey* (see page 9).

* See 'Additional books received' (pp 63–67) for the full titles of the publications mentioned in this introduction.

Trends 1980/2

A mathematics lesson

Eric Love
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The report on the national secondary survey† argues strongly that the way in which a mathematics teacher interprets teaching material is crucial. According to the report 'the impressions which a pupil receives of mathematics at school and the memories which he carries of the subject into later life depend on the style of teaching he receives'. It has been observed that the views children hold about the nature of mathematical activity largely determine their approach to mathematics. If mathematics is presented to children as a set of rules that they must remember and carry out, increasingly they will believe they cannot work in an unfamiliar area of the subject until they have been told 'how to do it'. Even if the teacher attempts to put forward a different notion of mathematical activity from that held by his pupils

† HM Inspectorate. *Aspects of Secondary Education in England. A Survey by HM Inspectors of Schools.* London: HM Stationery Office, 1979, £6·75.

they will, for a considerable time, interpret what they are asked to do in the light of their existing beliefs. To enable children to use mathematics in unfamiliar situations, they must be encouraged to invent mathematical problems themselves and to devise their own methods.

A lesson

Here is an account of a lesson that attempted to do this. The lesson was a failure, but, perhaps, an instructive one. It was the first in a three-week programme and used items from a worksheet in the *Journey into Maths* scheme*:

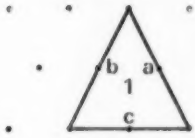

Figure 1

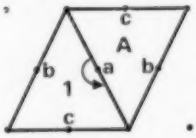

Figure 2

You need some triangular spotty paper and some tracing paper.
Copy the triangle 1 *above on to the middle of your spotty paper (Figure 1).*
Label the mid-points of the sides as shown.
Trace the triangle and its labels on your tracing paper.
Now use your tracing paper to give 1 *a half turn about* a *(Figure 2).*
Prick through the tracing paper to show the new position of the triangle.
Draw it and label it A.
Do the same for b *and* c.

The class is a mixed-ability second year at a comprehensive school. They are used to working in an exploratory way. I am using an overhead projector. On it there is a dot-grid of triangles, with one triangle drawn in. A copy of this triangle is drawn on another acetate sheet. I pivot the triangle about the marked point and turn the acetate sheet a little way clockwise (Figure 3):

Figure 3

'What shape will I get if I turn this shape through half a turn?' I ask the class.

'A star' is the first suggestion, quickly followed by others, the one gaining most acceptance, being 'a diamond'. Nobody uses formal mathematical language, so I stay with the pupils' lay terms, move the sheet around, and then draw the triangle in its new position on the underlying sheet (Figure 4):

* Figs. 1 and 2 are based on figures appearing in Bell, Alan, David Rooke and Alan Wigley. *Journey into Maths, Stage 2.* Glasgow: Blackie, 1979.

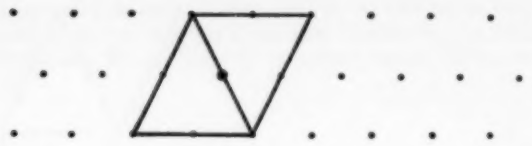

Figure 4

I still have a completely open mind about the directions that the lesson might take, and am by no means committed to following the instructions on the worksheet. Could this be an opportunity to look at rotational symmetry, or at the properties of shapes, I ask myself, and then address the class:

'What happens if I turn it about another half-turn?'

'You get a triangle,' they chorus.

'A triangle? Just one triangle?'

Yes, there is general agreement about that. Now the original idea beckons strongly, and, after asking questions about what would happen if I turned the triangle anti-clockwise half a turn, I decide to continue with the ideas of the worksheet.

I explain about labelling the mid-point a, and the new position of the triangle A, and then rotate about another of the midpoints of the sides (b in the original diagram). I ask the same questions again, and this time the answers come with less hesitancy from the class. When I mark the remaining midpoint there is immediate recognition that a big triangle will be formed (Figure 5):

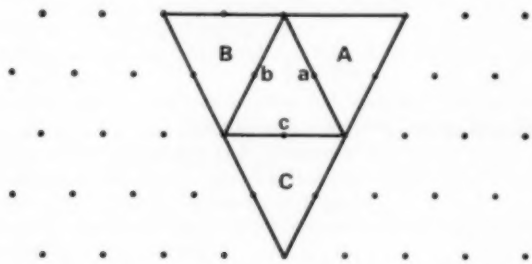

Figure 5

I wonder if I should ask why it turns out as a bigger equilateral triangle, but I feel I don't want to get involved with discussions about sides and angles at this stage, so I press on with the original idea.

With the sheet rotated to triangle A, I now ask the class what will happen if I turn through a half-turn about point b (this point, like a and c, has been marked only on the acetate sheet and has now moved to a different position).

'There'll be another triangle on the other side.'

'Where?' I ask.

'On the right-hand side. Over there,' someone answers.

After a little more discussion, I draw it in, labelling it AB (meaning 'turn about a then about b') (Figure 6):

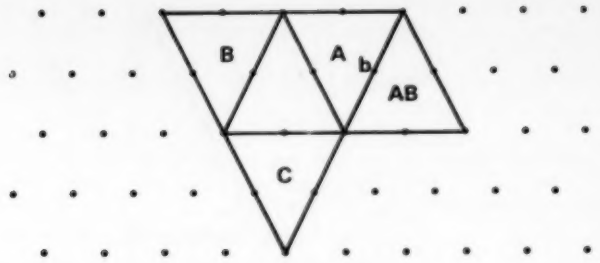

Figure 6

I then pose questions about where the triangle will go if I turn it about each of a and c from its new position. The diagram on the projector now looks like this (Figure 7):

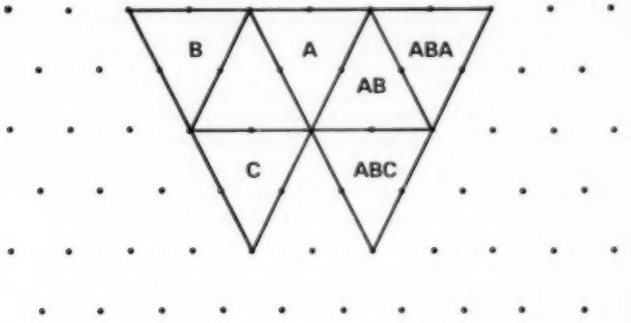

Figure 7

Purposeful drawing There is a slight suggestion of restlessness about the class, and I have been talking and questioning for nearly a quarter of an hour, so I decide that it is time to adopt a different tack. I give out dot grids and tracing paper with instructions that they should select and label triangles. I leave them to choose their own, knowing that I can ask individuals more specific questions later. As they produce their own diagrams, I move around the class, helping them, checking to see if they have the right idea about what to do. This kind of purposeful drawing keeps them quiet and concentrating.

But what is all this about? It is clearly not about an important mathematical concept or skill, in the way teaching about Pythagoras' Theorem, or calculating decimals, or even how to draw parallel lines accurately would have been. The first thing to note is that the context of the lesson – rotating triangles on dot-grids – is, in itself, unimportant; other starting points might have been chosen to lead to the same objectives. There will be a fair amount of incidental learning about symmetry, or about how rotations behave, or about the properties of figures, but the objectives at this stage are about symbolizing and classifying symbol systems. They are about inventing algebra and discovering its properties. And, as always, I am trying to convey a particular view of mathematics: that you can devise your own problems and explore them.

Routes back to the start

As I go round the class, I decide to ask the children to consider different routes that will lead to the same triangle. So, for example, both ABC and CBA are labels for the shaded triangle (Figure 8):

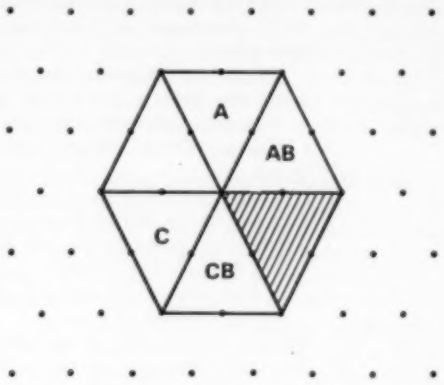

Figure 8

My notion is that the children will find rules for deciding when labels represent the same triangle and, as I go round the class, I put this suggestion to a few of those who have got on faster.

I start to talk to the whole class again, using the overhead projector to record some of the labels they have devised. One suggestion, from Sharon, had not occurred to me:

'The triangle you start at has the label ABCABC.'

I thought this might have possibilities.

'Has anyone got any other labels that will get you back to the start?', I decide to ask.

The class suggests four other labels and these are checked on the projector; some work, others do not. I set the class to find further variants. Jane calls me over to her table, and tells me:

'They are all like this: ABCABC, CABCAB, CBACBA. Three letters and then the same again.'

I ask her how many different ones there are. Shortly afterwards she says there are six of them.

Sharon's suggestion now looks very promising. There are likely to be rules for deciding whether a label takes the triangle back to the start, but I have no idea what they might be. There is no real doubt in my mind now about the form of the rest of the lesson: I will let it continue in the direction it has taken. I am sure I can trust the mathematics – something will come of it. The advantage to the children seems obvious – they will be looking at a problem in which none of us knows what will turn up.

Tentative rules

Now the children produce a sizeable collection of back-to-the-start labels. A selection of these – mostly four or six-letter labels – is put on the blackboard. They are checked and rules tentatively suggested in a question and answer session:

'Do you notice anything about these six-letter labels?'

'They repeat themselves.'

I probe them further:

'Can you say more about that. Can you be a bit clearer?'

'Well, there's ABCABC, then ACBACB. There's three letters repeated.'

'Can you suggest some more?'

BACBAC is suggested, it is tried on the overhead projector and works. Julie offers:

'There's six combinations which each have A, B, C in them.'

I ask what they are, and list her six possibilities on the blackboard.

'How do you know there are only six?', I ask. Here I am looking for a systematic listing, but when I ask Duncan, who has his hand up, he says:

'There's more than six. There's BABBAB and CACCAC as well.'

So I take this up and ask a new question:

'Can anybody explain why any three letters, once repeated, get you back to where you started?'

'It goes forward and then it comes back again over the same triangles,' someone suggests.

Another counters with 'Sometimes it goes right round.'

We spend some time sorting out the meaning of these remarks, and follow it with a similar discussion on labels of other combinations of letters. As the end of the double period approaches, I set homework which includes testing a twenty-letter label that one of the children has devised.

So, what had they learned?

As with every lesson, different children had learned different things, and some of these I was aware of, but most not. I was fairly sure that Norman had learnt about the effect of half-turn rotations on triangles: he was very surprised when a hexagon was formed by successive rotations. Jane had learnt that there are six permutations of three things, and had devised a method for finding them systematically – and I felt fairly confident that she could generalize her method to larger numbers of objects. It would be possible to produce a list, albeit incomplete, of genuine achievements which had resulted from the lesson.

All the pupils had, I hoped, become more aware of the way in which they can devise problems for themselves; try things out to see what happens; invent structures; search for rules and expect to find them; generalize the rules. And this was the fundamental intention of the activity: I had attempted to demonstrate that they could be in control of their mathematical study rather than being told what to do at each stage. That was why I had refused to give answers and had followed up the children's directions.

My problems and their problems

I left the classroom feeling fairly pleased. A little later, I talked about the lesson to four of the girls. What had they made of it? Well, they had enjoyed it but were sure I had known the answers all along.

So, to them it had been another 'guided discovery' session, where I knew, but wasn't telling. The problems had not been *their* problems, after all. The pupils had certainly initiated the problems, but they had not felt in charge. Perhaps my teaching methods were as much to blame in this as the children's concept of mathematics. I had over-controlled the lesson, commandeered the problems, and fed them back to the children, turning them into *my* questions. I had not succeeded in one of my main aims for the lesson, and would need to be more subtle the next time.

But the effort will be well worth making again. Indeed, I see no alternative to attempting to give the children control in the way a teacher would if his pupils were producing a painting or making a table; my role, like his, should be to help them realize their intentions. Otherwise, when they have to use their mathematics in an unfamiliar situation, or to think about the meaning of what they are doing, they will have the utmost difficulty in doing so. They will only know how to do what they have been instructed in, and will know nothing of alternative routes to the same objective. *Notes on Mathematics for Primary Schools** says:

> 'Every time a teacher insists on his way of doing a piece of mathematics, rejecting any responses which do not seem to fit, he nibbles away at his pupils' ability to act mathematically. We believe in the value of the child's mathematics; that he should have freedom to make it and use it and talk about it. The child may sometimes make mathematics that to an adult is not valid. Provided the teacher avoids *ex cathedra* judgements, and has sympathy with what the child is trying to do, it is then proper for the child's mathematics to be put to the social test. In this way the sensitive teacher can balance his pupils' need to think their own thoughts with their need to share and communicate with other people. The preservation of some degree of equilibrium between the demands of mathematics to be socially acceptable and the freedom to invent mathematics which may have meaning only for the inventor is the chief pedagogical task.'

Acknowledgement My thanks are due to the staff and children of South Wolds School, Nottinghamshire, where this lesson took place.

The diagrams accompanying this article should not be interpreted too literally. For technical reasons it was not possible to show precisely the shapes that evolved during the lesson described.

* Association of Teachers of Mathematics. *Notes on Mathematics for Primary Schools.* Association of Teachers of Mathematics, Nelson: 1967

Trends 1980/2

Mathematics teaching: secondary survey findings and pointers to progress

Mathematics teaching has changed markedly over the last twenty years and there has been an upsurge of interest in the subject as part of the public discussion of general educational aims and standards. The national secondary survey* gave an overall view of teaching mathematics that was unprecedented in coverage and in the amount of detailed evidence collected. It was carried out from 1975 to 1978 when some 384 schools were visited by teams of HM Inspectors.

The survey covered the general organization and curriculum of secondary schools in years four and five and paid particular attention

* HM Inspectorate. *Aspects of Secondary Education in England. A Survey by HM Inspectors of Schools.* London: HM Stationery Office, 1979, £6·75.

to the teaching not only of mathematics, but of language and science, and to the school's provision for the social and personal development of its pupils. The chapter of the survey dealing with mathematics discusses both the teaching in lessons specifically devoted to the subject and the role of mathematical ideas elsewhere in the curriculum.

The main findings

The national secondary survey looked at many matters of public concern. The generally acknowledged shortage of suitably qualified mathematics teachers is confirmed and an attempt made to assess its extent. This said, there is much that is reassuring in the document:

1. Mathematics is taken seriously in schools and very few pupils drop the subject before the end of compulsory schooling;
2. Schools recognize the importance of mathematical qualifications and painstakingly prepare pupils for examinations;
3. More than 80 per cent of pupils surveyed were on courses leading to O-level or CSE examinations (a much higher percentage than the examinations were originally intended for).

The report quotes many examples of good practice, and more than three quarters of the courses seen were assessed as acceptable or better, as far as the more able and average pupils were concerned. Although much remains to be done, schools are clearly making a substantial effort to provide courses offering much more mathematics to the majority of pupils than happened in the days when most were taught little more than arithmetic, some mensurational geometry and rudimentary algebra.

Teachers have responded to recent criticism, as they have perceived it; but this response has sometimes been counter-productive. Many cases were seen where a narrow approach to mathematics had been reinforced, and the teaching was directed more towards short-term success in the skills and techniques that examinations can test easily, and less towards cultivating understanding of the purpose of the subject and confidence in applying skills in a variety of circumstances, including elsewhere in the curriculum.

Less able pupils

Schools of all types were much more successful in planning courses for their abler pupils than for their less able (development of fresh courses for less able pupils was recommended in more than half of the schools visited). The courses for these pupils frequently made inappropriate demands. The approach to the ideas was often unnecessarily abstract and when pupils had difficulties with arithmetic, the remedy was too often repetitive practice of these skills without providing examples of simple applications to enliven and give purpose to the study. The development of everyday uses of mathematics was usually stated as a major aim of non-examination courses, but the aspiration was often poorly realized, sometimes because it was felt that techniques had to be revised first (and this often did no more than reinforce earlier failures) and frequently because suitable source material was lacking. There was a general need for better source material – technical data, sales catalogues, diagrams, plans, maps, timetables, sporting records, simple measuring instruments and pieces of machinery – to enable the subject to be taught realistically. This need was especially urgent for teaching the less able.

The most able

The survey showed that the public-examination syllabuses generally provided a satisfactory course framework for abler pupils (for whom

the syllabuses were devised), although much more could be done to provide better examples which apply the ideas. Courses should, however, provide a bigger challenge to the ablest pupils, who can cope with O-level examination demands without undue effort. Whether they intend to study mathematics in the sixth form or not, these pupils often benefit from being set tougher problems on the same ideas, or being encouraged to study a wider range of topics by independent reading, or to undertake investigations, perhaps involving statistical ideas or computer work.

'Traditional', 'modern' and 'compromise' courses

Much recent discussion has centred on the respective merits of 'traditional' and 'modern' mathematics courses. What do these terms mean in the context of the complex situation found in schools? At the time of the survey approximately equal numbers of schools would have described their mathematics courses as 'traditional', 'modern', or a compromise between the two. Some schools provided different courses for pupils in different ability bands; some described their courses as 'traditional' despite the presence of such items as vector geometry and matrices in their syllabuses (considered by many to be 'modern' topics); while others described their courses as 'modern' when the modern ideas were given only minimal treatment and the teaching lacked the freer, experimental approaches the course authors wished to promote.

Grammar schools had adopted modern courses to a greater extent than other types of school, whereas secondary modern schools had adopted them less. The percentage of schools providing modern courses no longer appears to be increasing, while the number providing 'compromise' courses may be growing. As to traditional courses, there is perhaps an increasing tendency to provide these for non-examination pupils in years four and five, even when they have been on modern courses earlier in the school.

Using criteria detailed in the survey report, HM Inspectors assessed the overall provision for mathematics in the school and the pupils' response. The provision for and response of the more able, average and less able groups* were assessed separately. The assessments were summarized by six gradings, A–F, and this enabled some statistical comparisons to be made. Generally speaking, for the more able and average pupils modern courses received better provision assessments than traditional courses, but there was no noticeable difference in the assessments given to pupils' response on different types of course at any level of ability. While modern courses were assessed more favourably for provision, this was by no means an automatic consequence of the material in the syllabus. There were indications that teachers who had introduced new types of course had also had occasion to think more deeply about the *raison d'être* of the material they were teaching, with consequent benefit to the general quality of the work they did.

It appeared that modern courses were sometimes associated with diminished levels of skill in arithmetic and algebraic manipulation. In many schools, staff had taken note of this danger and were implementing corrective action, or had already done so. Where the staff are determined to maintain a proper balance, modern courses are completely compatible with acceptable levels of computational and manipulational skill. It should not be assumed that these features are inevitably associated with traditional courses.

These courses may attach relatively greater weight to computational

* These terms refer to the schools individually and not to the entire school population.

arithmetic and algebraic manipulation, but many cases were seen where repetitive practice was yielding scant returns and where, as in the past, pupils who had been extensively drilled in techniques were still unable to apply them successfully to problems in the laboratory or workshop.

Mathematics and other subjects

The ability to apply mathematics to other subjects is much to be desired, and if pupils cannot utilize their knowledge in other classrooms of the school it augurs ill for their ability to apply it later in the world outside. The survey confirmed that pupils have difficulty in transferring their mathematical knowledge to other subjects unless the transfer is deliberately fostered. Many cases were seen of mathematical ideas at work in geography and art and even religious studies (e.g. when discussing the implications of social surveys); and, of course, such ideas occurred frequently in craft, technical drawing and science. In some schools consultation was well organized, with staff taking measures to interrelate the mathematics arising in different parts of the curriculum, thereby giving pupils additional opportunities to learn. The ready availability of electronic calculators – a new development in the duration of the survey – brings new problems and further opportunities. A school needs a coordinated policy for the use of calculators if their potential benefits are to be realized.

The head of department

The written reports from inspectors engaged on the survey repeatedly emphasized the crucial role of the head of department. Even when all the teachers in a department are well qualified and capable of informed choice, their work requires coordination. In addition to inducting new teachers and assisting those who teach some mathematics, but whose main expertise lies elsewhere, the head of department has the responsibility for developing the school's mathematical programme in a coherent way.

Mathematics is a growing subject; it is continually being used in fresh ways. Syllabuses change: if they are to be sensibly interpreted then in-service study has to be a continuing component of the teacher's professional life. Schools were seen during the survey in which the leadership of the head of department had had a profound effect on the work of his whole team and had raised this work to a level of excellence hardly to be expected considering the constraints under which it was done. Some schools could well base a programme of in-service training on their own resources, but more frequently they need a measure of external support. The nature of the support must depend upon what is available locally.

The national secondary survey confirmed that the work of a mathematics department is greatly helped, and good teaching encouraged, if a block of rooms is assigned for the specialist teaching of the subject and if these rooms are suitably equipped. More than half the comprehensive schools surveyed had such specialist rooms. and falling rolls may enable other schools to follow suit.

Mathematics teaching is a demanding task with which most schools cope creditably. But many problems remain, especially those of teaching the less able and relating the material taught more clearly, and realistically, to the outside world. In tackling these problems, teachers require the fullest possible support from parents, local authority advisory services, training institutions and mathematicians of goodwill in other walks of life.

Supplementary information

Since this article was written a report* giving more detailed information on the teaching of mathematics in secondary schools and supplementing the main national secondary survey report has been published. It identifies some trends over the last five years; there are also tables giving data about the age distribution and experience of mathematics teachers, and the organisational features in different types of schools. The report is intended to assist local education authorities and teachers to assess their own arrangements for teaching mathematics in relation to national practices. HM Inspectorate studied a number of suggestions for improving the teaching of mathematics and assessed their relative priorities. The priority areas are:

better cooperation between the mathematics department and other subject departments;
organisation of new courses for less able pupils;
in-service training for assistant teachers of mathematics;
in-service training for the heads of department;
greater use of existing resources;
reallocation of accommodation;
appointment of additional mathematics teachers;
organisation of new courses for average pupils;
organisation of new courses for more able pupils;
larger share of capitation;
timetable modification to give more teaching time;
improved liaison with other secondary schools;
improved liaision with further education.

The report says: 'The teaching of mathematics was insufficiently related to the teaching of other subjects in the schools and the world outside; and the courses provided for less able pupils required particular attention and replanning.'

* *HM Inspectorate. Aspects of Secondary Education in England: Supplementary Information on Mathematics.* HM Stationery Office, 1980, £1·90.

Trends 1980/2

Using mathematical games and puzzles

Maureen Ricardo
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Children obviously enjoy playing, and exhibit concentration and considerable intelligence, enthusiasm, energy and creativity when they are doing it. Games may be played in the classroom that enable these qualities, which often desert children when they enter class, to be rekindled. One subject that lends itself to the use of games and puzzles is mathematics, but any teacher contemplating adopting this means of promoting pupil interest should recognize that the main objective is not finding a substitute for conventional teaching methods but a way in which to supplement and enrich them. In addition, games and puzzles:

provide an enjoyable way of practising skills and facts already learned;

reinforce basic concepts;

provide starting points for investigations;

promote logical thought;

encourage the development of strategies;

generate interest in mathematical activity; and, most importantly, promote a creative attitude towards the subject.

The social aspect of playing games must not be overlooked – observing rules, taking turns, looking after equipment, and so on – since this is such an important part of a child's development. Most games are competitive and this element makes them worth playing; an element of chance is also desirable, for with such games the loser does not experience the intense feeling of having lost that might be the case with, say, chess.

Which games and puzzles?

Teachers should themselves have played the games (or done the puzzles) they introduce to their pupils. Teachers' centres, which are a valuable source of ideas, can help in this connection; they often stock a selection of games and puzzles that can be tried and tested before they are either purchased or made. A particular advantage of home-produced games is that they can embody adaptations to suit particular needs. Some of the best games and puzzles need only pencil and paper, and materials for others are usually readily available in schools. When trying out a new game, it is advisable to use squared paper, pieces of card and a felt-tipped pen, and if the game proves successful then it can be produced in a more substantial form. Presentation is all important in stimulating interest in home-made games; and where possible children should be encouraged to make their own equipment.

Board games

A variety of games where players move pieces on a numbered board in accordance with figures indicated on a die or spinner can be devised using the one hundred square as a base. These games usually have a theme attached, as in 'Snakes and Ladders', and some squares have bonuses or penalties in the form of instructions to be followed. It is in this area that children enjoy creating their own games; e.g. making the board into a race-track, road, or river. Bonuses or penalties can be marked and corresponding instruction cards provided. Junior school children can produce some very attractive and interesting board games involving work related to other areas of the curriculum.

Other board games involve strategy rather than chance and players have a choice of moves usually governed by a set of rules. Probably the best known game of this type is noughts and crosses. Although it is over quickly, this game retains its appeal and children can be asked to answer questions about it, such as:

If you are X and beginning the game how many choices do you have? (At first it would seem that you have nine, but, in fact, there are only three different positions.)

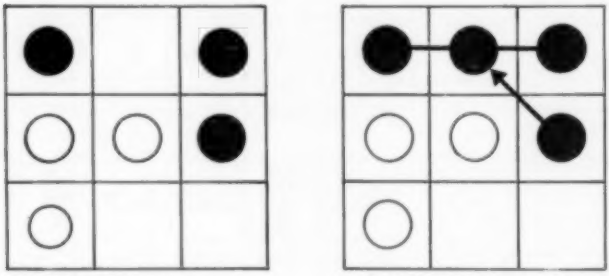
Is one opening move better than another?

Suppose either player can put a nought or a cross at each move. Can the first player always win?

What happens if the object of the game is changed to avoid the formation of a row of noughts or crosses?

What would be the effect of extending the board to create a four by four grid?

Figure 1 shows another variation of noughts and crosses. Two players have three counters each which they take turns to place on the board, trying to get three in a row. If after the six counters have been placed there is no winner, the players try to achieve their objective by moving their counters on the board. Counters can be moved horizontally, vertically or diagonally into any adjacent empty square. If the same position is repeated three times in succession the game is drawn. This is a good introduction to games of strategy using an already familiar game.



(a) After playing six pieces with ● to move

(b) ● wins by moving as shown

Figure 1

Adaptation of well known games

Variations of well known games provide an interesting study. Enlightening results can ensue, and it is noticeable that, with exercises of this kind, it is not always the apparently 'more able' pupils who produce the most original and interesting ideas. Many children show a remarkable tenacity in exploring investigations of this kind to the limit, and a game that allows for several variations means that the same equipment is suitable for a wide range of age and ability.

The popular games of dominoes and bingo, for example, lend themselves to adaptation in many areas of mathematics, and it is useful if each member of the class makes a set of numbered cards ready for such occasions. A few of the possibilities are shown in Figure 2.

Care is needed in preparing cards for dominoes or bingo, however. to ensure that the games can be played to a successful conclusion, There is a danger that these games could be exploited to the point where children become thoroughly bored with them.

Calculators

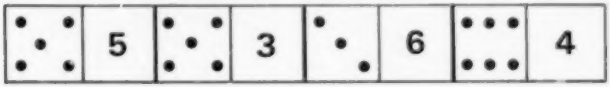
Calculators, now available in many primary schools, can be used in many games and activities. Children enjoy using calculators, often seeing them as the answer to all mathematical problems. It is valuable to devise activities which involve:

numbers of different sizes;
decimal-place value;
estimation of answers;
care in data entry.

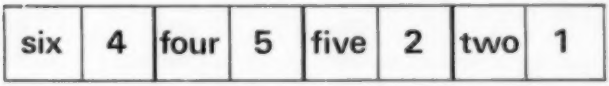
One calculator can be used profitably by three or four children. Given a set of operations, such as:

$72.000 \div 20$	$0.2 \div 5$	$0.021 \div 3$
$1.818 \div 18$	$326 \div 3000$	$4.27 \div 0.5$

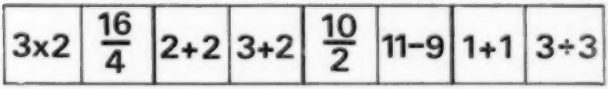
each player records his *estimated* answer and then the calculator is used to obtain the correct answer. Points are scored, one for correct size of number and a further point for correct first digit.



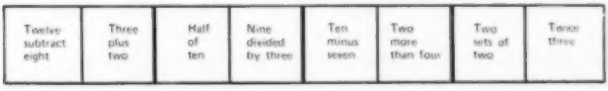
Matching dots to numerals



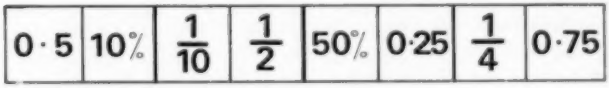
Matching numerals to words



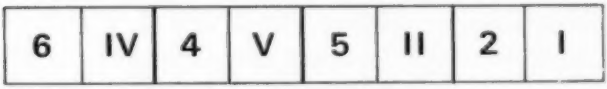
Matching-number operations involving addition, subtraction, multiplication and division, or any combination of these



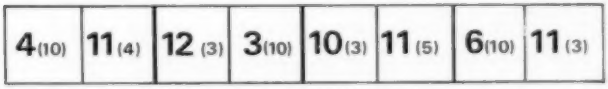
Matching numbers using words instead of signs and symbols



Matching fractions, decimals and percentages



Matching numbers from other systems (e.g. Roman)



Matching multibase numbers

Figure 2

Puzzles

Unlike games, puzzles can be attempted by one person and several different solutions or methods of solution are possible. One of the advantages of using puzzles is that they promote discussion about the best way of arriving at a solution. Such discussions, whether between child and child, child and the rest of the class, or child and teacher, give pupils excellent experience in communicating and clarifying their ideas and thoughts. Figures 3–5 give some examples of puzzles.

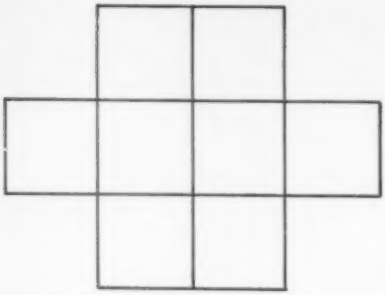


Figure 3

Place the numbers 1–8 in the diagram in such a way that no consecutive numbers are in adjacent squares (vertically, horizontally or diagonally)

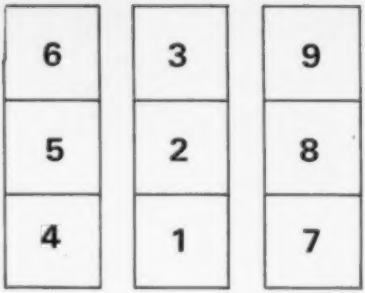
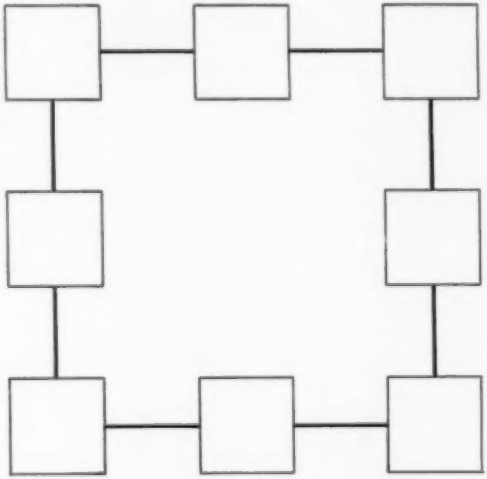


Figure 4

In how many different ways may these nine boxes be arranged in three tiers of three so that no box has a smaller number than its own below it or to the right of it?

Figure 5

Place the numbers 1–8 in the boxes so that the three numbers in each row or column total 12. Rearrange the numbers so that the totals are 13, 14 or 15
How many solutions are there?
Can the numbers be arranged so that the total is less than 12?



Once children are accustomed to the types of games and puzzles used they should be encouraged to make up their own and explain them to the others in the class. Clear instructions should if possible be written down but appropriate improvements and amendments that crop up during the progress of the game should not be ruled out.

Who, when and where?

Some games can be played by the whole class with the teacher. The game, 'Numero' for example, requires very little equipment and can be enjoyed by seven- to eleven-year-olds at most levels of ability. The game reinforces decimal-place value and encourages each child to make his own decisions.

Most games are better suited to smaller groups. Four children playing a game is advisable; more than this and players' involvement in the game and interest in checking others' moves are likely to wane. Bingo games can involve up to six children plus a 'caller'.

A group playing related games (involving perhaps twelve children) that have been introduced by the teacher for a specific purpose is better than having the whole class playing a variety of games. This gives the teacher an opportunity to work with other groups. All the children should understand that they will be given the opportunity to play games or attempt puzzles.

The best time for these activities is probably during a mathematics lesson but a permanent games and puzzles table in the classroom is usually a popular and well used resource. Wet playtimes are a good time to let children choose their favourite game or puzzle and there should be something to interest and challenge most children, whatever their age or ability. Games should not be regarded as 'treats' or trivial time fillers.

Space for playing games is not necessarily a problem. A mathematics corner is ideal, of course, but most games only require some regrouping.

Reactions

Not all games and puzzles will be met by the same enthusiasm, and on the whole children are ready to say what they like or dislike and why. The reasons they give are important and should be discussed with them. It must be realized that the spontaneity of playground games will not necessarily be recreated in the classroom: the presence of the teacher inhibits some children.

Schools which introduce games and puzzles into mathematics teaching usually find that parents respond enthusiastically. In fact, instances are reported of parents becoming so thoroughly absorbed on open evenings that they have to be persuaded to leave, and go away taking an unfinished game or puzzle to complete at home.

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Figure 1 Kohl, Herbert R. pp 94/95.
Figure 2 *Enjoying number work**. M.E.C. Working Party.

* A booklet published within the Manchester Education Authority and compiled by a working party of Manchester teachers of which the author was a member.

History and mathematics

As history comes to rely more and more heavily on mathematical method, the opportunity for interrelated schoolwork in history and mathematics increases. One of the main ways in which this can be achieved is by ensuring that historians and mathematicians know more about each other's work.

Areas of experience to which all pupils should have been exposed by sixteen were suggested in HM Inspectorate's 'Red Book'* about the curriculum. They were listed as aesthetic, ethical, linguistic, mathematical, physical, scientific, social/political and spiritual. The book also describes how certain subjects, such as history or geography or mathematics, might help schools in their efforts to introduce young people to these areas. Clearly mathematics is the most effective way of introducing young people to the mathematical area of experience, but other subjects have important roles to play in this connection.

This article concentrates on average pupils and normal courses of work, and where ages are cited they should be considered approximate guides. The main age range chosen for discussion here is the nine to thirteen group – since the majority of pupils in this age range study history. History is a fairly popular option at thirteen (some 55 per cent of pupils choose it), so some comments are made concerning the fourteen to sixteen group. Lastly, the article outlines possibilities for more advanced links between history and mathematics at sixteen-plus.

Many syllabuses provide opportunities for history and mathematics to work together advantageously. Moreover, ordinary history courses contain elements that need mathematical precision, otherwise loose or unhelpful descriptions of past events may be given. How many ships were in the Spanish armada? How wealthy was Lorenzo the Magnificent? How do we measure the poverty of a medieval serf? How large was the empire of Kublai Khan? Historians often need definite answers to such questions rather than generalities.

Terms

A useful curricular strategy is to list the terms that ought to be understood by pupils at certain stages in their development. For example, by thirteen, pupils should know what is meant or implied by:

add, subtract, multiply, divide;
probable, possible (see the following section);
decade, century, generation, millennium, cycle;
percentage, proportion, ratio, scale;
early, middle, late, average;
units of measure (see below).

Number work

In communicating we often use quantitative descriptions; this trend is growing and ought to increase precision in communciation since it

* HM Inspectorate. *Curriculum 11–16. Working papers by HM Inspectorate: a contribution to current debate.* London. HM Stationery Office, 1977.

This article is based on a paper prepared by a working party of HM Inspectors: R. A. S. Hennessey (chairman); B. A. Chaplin; G. J. Neal; A. Owen; I. Paterson.

helps in hardening statements and ideas which, as Dr Johnson noted, formerly 'floated in the mind indefinitely'.*

Any number work in history demands 'the ability to carry out practical activities involving the ideas of addition, subtraction, multiplication and division'.† By performing these and other suggested tasks in history (or in any other subject where such operations fit into the task in hand without being too contrived) mathematics not only supports the subject, but also benefits itself by getting practical application 'across the curriculum'.

Simple statistical analysis is the number work most familiar to historians. Therefore young historians (from eleven onwards) ought to be able to handle simple statistics relating to the period or place they are studying and to compare them with some norm – contemporary Great Britain, for example. Such data might be: population numbers, birth and death rates, expectation of life, prices, or the speed of travel by various means. To perform these tasks a pupil will have to be able to recognize and interpret percentages, fractions and decimals as well as the larger numbers that appear in history work: thousands, tens of thousands, millions and billions (and perhaps the useful milliard, familiar on mainland Europe although less so in Britain). Finally, because such information is often tabulated, pupils should be able to comprehend and construct comparative statistical tables.

Thus, a young historian ought to be able to:

collect statistics;
record, organize, interpret and present data;
make reasonable extrapolations from given data;
visualize accurately numbers of people, relative size and extent.

Also important for young historians is the ability to order data in sequence, i.e. place historical events correctly in series. At its simplest this means familiarization with a time-chart so that pupils can put, for example, the dinosaurs, the crusades and Queen Victoria in the correct order. This is crucial for history and humanities courses in the middle years, and if it is ignored all kinds of anachronisms and scale distortions can result. Later, at thirteen to sixteen say, placing events in correct historical sequence is vital to any investigation that looks at cause and effect or at historical change. It may be that history work can give useful practice in other forms of ordering such as alphabetical or by magnitude. Nevertheless, chronological ordering is the most common and useful form employed by historians.

With an increased range of reference a pupil ought also to be able to look at historical data and see if they are realistic – that is, to make sensible estimates and distinguish between possibility and probability. Estimates could relate to some of the data already mentioned – population and group sizes, territorial extent, and prices. Work of this kind will be valuable practice, relating mathematics to problems of the real world.

* In his *Life of Johnson*, James Boswell records this exchange:
'Boswell: Sir Alexander Dick tells me, that he remembers having a thousand people in a year to dine at his house: that is, reckoning each person as one, each time he dined there.
Johnson: That, Sir, is about three a day.
B: How your statement lessens the idea.
J: That, Sir, is the good of counting. It brings everything to a certainty, which before floated in the mind indefinitely.'

† *Curriculum 11–16.*

Measures in history

So far this article has looked at the possibilities inherent in young historians' handling of simple data, numbers and straightforward mathematical ideas. However, since units of measurement feature in history work as children get older (twelve plus) they are likely to come across obsolete units, or units that require further description and processing before they can be understood clearly.

Mostly pupils ought to employ units of measure now in force (i.e. SI units and, where still applicable, imperial units), but the study of history will still involve knowledge of obsolete units, and pupils should be able to convert these into contemporary ones. As to monetary units, it is important that pupils gain a clear idea of the value of money during the era under study. Textbooks are not always helpful in this regard, nor are original sources, such as historical documents. Therefore, pupils should know where to go for help – good dictionaries, encyclopaedias and other sources of the required information.

The most common problems (and missed opportunities) are:

– failure to convert old sterling to current prices; thus we hear that a Tudor house cost '£60' or (from a textbook): 'The Asiento . . . was surrendered in 1750 in return for a payment from Spain of £100,000'. If these figures are not appreciated then they are quite misleading, even meaningless. If they are appreciated then they provide a most valuable example of change through time, one of the main ideas imparted by the study of history. Also such work can produce some useful economic understanding. There are various sources of currency-conversion such as the comparative tables produced by certain clearing banks;

– failure to convert exotic units of measurement such as 100,000 'silver marks' or £5 Scots into present-day values or otherwise to define or explain them, or to define obsolete units such as groat, farthing, piece-of-eight or pagoda. The same consideration applies to units measuring length, area or volume: versts, quintals, li, cadastrals, and so on. This problem is confined more to fourteen-plus and more particularly to sixteen-plus work. It is as important for history pupils to be prepared for this difficulty as it is necessary for authors and publishers to be helpful on the matter.

Time

Clearly an understanding of time and familiarity with the measurement of its passage are essential skills for historians.*

Teachers could endeavour . . .

– to make their pupils conversant with the technical terms by which we measure the passage of time: centuries, decades, AD, BC, and so

* *For a general discussion of the nature of time and our perception of it, see:*
Whitrow, G. J., *The Natural Philosophy of Time*. London: Nelson, 1961 and Toulmin, S. E. and Goodfield, G. J., *The Discovery of Time*. London: Hutchinson, 1965.
For pedagogical aspects of the matter see:
Jahoda G., 'Children's concepts of time and history'. *Educational Review*, Vol. 15 1962/63, pp. 88–104. Rogers, W. K., 'Concepts in time in secondary school children of above average IQ'. *British Journal of Educational Psychology*, Vol. 37, 1967, pp. 99–109. Smith, R. and Tomlinson, P., 'The development of children's construction of historical duration: a new approach and some findings'. *Educational Research*. Vol. 19, No. 3, 1977, pp. 163–70. West, J., 'Young children's awareness of the past'. *Trends in Education*, No. 1, 1978, pp. 8–15.

on. Competence in handling the calendar and in understanding its working and terminology should also be developed to make pupils fully conversant with methods for calculating spans of time, e.g. how many years elapsed between 1378 and 1445, or between 35 BC and AD 77;

– to give their pupils encouragement to appreciate and visualize passages of time – to acquire a time-sense. Although expert opinion differs on this question, there is no doubt that from nine onwards some children display the ability to talk in more refined terms about relative duration. Time charts will help them to put events into correct sequence; other aids, such as clock-faces that relate to the history of our planet, confining recorded human history to the last few seconds, can promote understanding of time-perspective.*

Space

The 'Red Book' stated that sixteen-year-olds ought to be able to 'handle . . . discuss, write about three-dimensional objects . . . solve problems about them by . . . scale drawings, interpretation of diagrams, plans and maps'. The drawing and interpreting of maps comes early in history teaching and is not uncommon before eleven. Other forms of spatial work found in history are model-making and drawing artefacts of the past. Such work ought to be done to develop precision in the use of scales: cramped pictures and unscaled maps should not be allowed to appear in exercise books or folders. This is a good example of how familiar work can be made much more effective by relating it to a definite curricular plan. Maps, models and diagrams are already common in the history work of nine- to thirteen-year-olds but they are too rarely part of a cross-curricular strategy of developing skills. Thus it is a question of doing the same syllabus more effectively rather than scrapping familiar approaches and taking on relatively untried ones.

Communication

As well as straightforward numbers there are other means of conveying ideas in history; for example, a course for nine- to thirteen-year-olds, and certainly one for fourteen- to sixteen-year-olds, gives ample scope for using the following:

pie charts (e.g. proportions of the population in feudal times who were nobility, churchmen, peasantry and so on);

bar charts and histograms (e.g. number of people dying before maturity from the middle ages up to modern times);

graphs (e.g. increase in the price of bread or decrease in the price of electric light);

special forms of map which show, for example, relative journey times rather than distances;

three-dimensional models and maps.

One advantage of conveying ideas graphically, of course, is that a picture can be worth 1,000 words, and is often more precise than prose.

The history of mathematics

Two aspects of the history of mathematics are relevant to this article: first the simple facts about the mathematical attainments of our ancestors that give insights into the nature of past societies and help

* *See:* Attenborough, D., *Life on Earth*. London: BBC Publications/ Collins, 1979; and Parkin, R., 'View from the lower deck—a progress report on the Schools Council Project: History 13–16'. *Teaching History*, Vol. 3, No. 12, 1974, pp. 354–9.

to illuminate contrast and change; second, the question of the nature of 'progress' – is humanity worse or better off now than formerly? – and how do we measure or perceive change? Young people usually enjoy participating in this debate (an enduring one in history) and can make sensible contributions to it, given data and guidance. A few of the mathematical considerations relevant here are:

(i) although understanding of mathematics has progressed and become more refined, many past societies also had mathematical systems of great refinement. The teacher should discourage any tendency to undervalue such achievements as that of the Greek, Eratosthenes, in measuring the size of the Earth (240 BC). By drawing attention to the existence of the highly accurate and advanced calendar of the ancient Maya civilization, or the geometry and astronomy of our megalithic ancestors, the teacher may thus correct some of the coarser and less critical notions lying behind the concept of 'progress', for all of these developments were examples of powerful mathematical thinking;

(ii) the necessity for accurate measurement that lies behind a great deal of fundamental technology. History courses already abound with outward and visible signs of this fact, although they may not draw sufficient attention to it. The manufacture of weapons, the building of castles and pyramids, the navigation of the oceans – all of these important achievements depended on forms of mathematical skill;

(iii) different societies have measured and recorded in different ways. By fourteen a pupil ought to know and to be able to use Roman as well as Arabic numerals; to realize that the Jewish or Islamic calendars use different starting points, and why this is so. To understand this feature of civilization is to begin to see unity in diversity – different outward forms, but similar underlying principles. Thus, the oriental abacus, the knotted string of the Incas or the pocket calculator of today may be seen as contrasting methods of accomplishing common tasks: coding, recording and computing;

(iv) nevertheless, the development of mathematical techniques suggests gradual yet perceptible development of two features: greater refinement through time and increasing employment of a common language shared and enjoyed by people all over the world. While a normal history course can draw attention to these features, it is also crucial that history work makes it clear that 'progress' is by no means always so clear or beneficial as this 'story' might imply.

Advanced work

Older and more advanced pupils may well benefit from more difficult work in the history of mathematics. This could be a feature of either advanced history or mathematics courses, or of general studies work for the sixteen to nineteen age group. 'History' in this age range is often political, although economic and social history have gained ground in recent years. Teachers can best gauge how much mathematical history, and to what level, is appropriate for their pupils. Non-mathematicians ought to be aware of important mathematicians whose work has made other forms of intellectual and practical achievement possible. For example, a student of the seventeenth century completely ignorant of Kepler, Newton or Leibnitz would be a very partial historian indeed. However, a student would need to have considerable

mathematical skill to have a real insight into the work of these men, or of later mathematicians like Euler, Gauss or Cauchy. The same could be said concerning really detailed study of the work of the ancients alluded to above – Euclidean geometry or Ptolemaic astronomy, for example. There is also the long and venerable history of pre-seventeenth century Chinese mathematics with its strong algebraic tradition of using words as symbols and, regrettably, for that reason largely unknown in the West. It is as important for young mathematicians as it is for young historians to realise that mathematics, like architecture, music and technology, is most definitely not a post-Renaissance western invention.*

Another link between history and mathematics in advanced work is in GCE A-level economic history, where students are encouraged increasingly to read and to interpret statistics as well as to show familiarity with certain basic historical data. Thus, in advanced work we find that economic and demographic history most usually employ mathematics. This development has grown swiftly in the past twenty years and is occasionally known as 'Cliometrics'.† Possibly its best known development was the support it gave to the 'new economic history', in which mathematical techniques were employed to gain deeper insight into past records, or to create models of past economic arrangements.

Conclusions

This short article has suggested strategies by which orthodox history courses can develop mathematical understanding and skills. Their adoption neither distorts nor diminishes history work – on the contrary, such strategies improve history teaching by permitting more precise data handling. Although history is largely a literary activity, it need not be exclusively so; indeed, it has long employed mathematical techniques; one example is economic and social history where mathematics has given form and precision to the study of trade, industry, populations, and the creation and distribution of wealth.

The current curriculum debate is largely addressed to these considerations:

what should young people know and be able to do by the age of sixteen; and to what areas of experience should all young people be exposed by a curriculum?

how can individual subjects contribute to these ends?

how can subjects help each other in their respective tasks?

This article advocates that syllabuses in history and mathematics should reinforce each other and that schools ought to have a clear and agreed strategy by which this can be accomplished.

* Needham, J., *Clerks and Craftsmen in China and the West*. London: Cambridge University Press 1970. Carr, H. W., *Leibnitz*. London: Constable, 1929. Caspar, M., *Kepler* (trans.). New York: Abelard-Schuman, 1960; New York: Collier, 1962. Coolidge, J. L., *The Mathematics of Great Amateurs*. London: Oxford University Press, 1949; New York: Dover, 1963. Kline, M., *Mathematics in Western Culture*. London: Allen and Unwin, 1954; Harmondsworth: Penguin, 1972. Russell, B., *A History of Western Philosophy*. London: Allen and Unwin, 1961.

† See Floud, R., *Introduction to Quantitative Methods for Historians*. London: Methuen, 1973. Temin, P. (editor), *New Economic History*. Harmondsworth: Penguin, 1973.

Trends 1980/2

Industrial experience for trainee teachers

Tom Syson
Lecturer, Department of Education, University College, Cardiff

In Trends 1979/2, *the director of the CBI's Understanding British Industry project bemoaned teachers' lack of interest in and commitment to industry. Tom Syson describes how a university department of education – the one in University College, Cardiff – is trying to change attitudes.*

Teacher-training institutions are gradually becoming aware of the need for teachers to gain some valid experience of industry. A few, such as a group of colleges of education in Gloucestershire, Homerton College, Cambridge, and the education departments of Sheffield City Polytechnic, Manchester Polytechnic and, of course, my own college, have organized spells in industry for interested students.

At Cardiff, we take pride in the fact that our Department of Education has been active since 1970 in promoting schools/industry contacts and the success achieved reflects great credit on the university's Science, Mathematics and Technology (SMT) Centre. This experience, combined with good relations with local industry, has made it feasible to introduce the option of a period of structured industrial experience into our PGCE (secondary) course.

The only course time available for this industrial element is during the last three weeks of the summer term when students would normally return to local schools for a final session of teaching practice, or go to schools where they have obtained a post and, therefore, will work from the start of the next term. In addition, this timing does not clash with the secondment of local teachers from their schools under the scheme initiated by the CBI.* A fortnight's experience was considered desirable since it would not overload the companies concerned and would provide time afterwards for discussion and the completion of written assignments.

List of objectives

A list of objectives for the fortnight's programme was drawn up based on the CBI scheme's ideas. It was felt that at the end of the industrial attachment the students should:

be aware of the importance of the provisions of the Health and Safety at Work Act, and of the procedures adopted by the company concerned to comply with that Act;

be familiar with the company's management structure and methods, including the role of trade unions, shop stewards, and so on;

have an understanding of the company's recruitment and training policies and methods, particularly how they relate to school leavers of all ability ranges, and be aware of the part that is played by further education in training;

* In 1964, the CBI in conjunction with the Schools Council launched the 'Introduction to Industry' scheme which enables teachers on secondment from their schools to spend up to three weeks in industry or commerce.

be aware of the flow of material through the company, and be introduced to the idea of 'value added';

be aware of the national and international structure of the industry of which the company is part;

have seen the types of skills, knowledge and responsibilities required by as many as possible of the different types of jobs in the company and gain a broad awareness of the wage and salary structure;

be aware of the ways in which new technology may change the company's activities in the future;

be aware of the role of research and development;

have investigated some specific area(s) in the company to develop material he/she can subsequently use in the classroom.

The programme

Twenty-two local organizations – all large employers and all but one previously involved in schools/industry contact through the SMT Centre – were asked to accommodate one student for a fortnight; most agreed to do so.*

Two of the firms† later agreed to take two students each, so that a total of twenty-three students could be accommodated. I then took the list of objectives to the firms to discuss the aims of the attachment and begin to draw up a programme. In the event, it was decided that the original list of objectives was too broad: instead five areas of activity were agreed upon as the basis for drawing up each programme:

recruitment and training;

administration, finance and commerce;

personnel, labour relations, trade union activities;

production, technical and laboratory services;

activities particularly relevant to each student's own subject area.

Drawing on the experience of the CBI scheme or their own graduate-entrant induction schemes, the companies rapidly devised stimulating programmes for the students which included such activities as working a night shift, spending a day with a travelling salesman or technical representative, and sitting in on trade union negotiations.

Participation

All of the PGCE (secondary) students were informed of the industrial option and thirty of the total 180 applied. Several criteria were used in making the final selection. Some students were ineligible because they needed more teaching practice. Some firms stated a preference for a male, either because of legal requirements (e.g. mines), toilet facilities, or the 'sensitive' nature of the wall 'decorations' in some of the factory areas! In other companies, the specialized nature of the work suggested that a science graduate might be more appropriate

* The following organizations participated in the scheme: AB Electronic Components Ltd, Abercynon; British Airways Engine Overhaul Ltd, Treforest; British Rail, Cardiff; British Steel Corporation, Lianwern; BP Chemicals Ltd, Barry; Brown Lenox & Co Ltd, Pontypridd; CEGB Aberthaw Power Station; CEGB Uskmouth Power Station; Dow Corning Ltd, Barry; Ford Motor Co Ltd, Treforest; GKN (South Wales) Ltd, Cardiff; ICI Fibres Ltd, Pontypool; Miles Laboratories Ltd, Bridgend; Monsanto Ltd, Newport; NCB, South Wales Area; Parke-Davis & Co, Pontypool; Post Office Telecommunications, Cardiff; South Wales Switchgear Ltd, Blackwood; Standard Telephones & Cables Ltd, Cable Factory, Newport; Standard Telephones & Cables Ltd, Electronics Division, Newport; and Wiggins Teape Ltd, Cardiff.

† The terms 'firm' and 'company' in this article refer to undertakings in both the private and public sectors.

than an arts graduate. The most arbitrary criterion was whether the student could, by virtue of having a car or living close to the company, get there by 8.30 a.m. each morning. Once the selection had been made, the group of twenty-three students comprised twelve women and eleven men, ten of whom were arts graduates, eleven science graduates and two geographers. The students attended two short briefing meetings where they were allocated to their companies, acquainted with the attachment's objectives and informed of the written assignments to be carried out. Each then paid a half-day visit to his or her company to determine its location, meet the industrial link-man and discuss the prepared programme.

During the fortnight's attachment the students kept a 'course journal', which served not only as a diary of facts and impressions, but also as a compendium of written material provided by the company. Such a journal encouraged the students to think carefully about their experience and to organize their ideas coherently. At the end of the fortnight, the students wrote a 1,000-word appraisal of their experience, commenting on what had been arranged and the validity of the objectives, and recording their impressions. A half-day 'post-mortem' was held at the end of term; this was attended by all the students, representatives from the participating companies and tutors from the university education department. Most of the firms had conducted debriefing sessions with their own students on the final day of the attachment, but this general meeting was invaluable for sharing ideas and examining the content of the experiences, and so on.

The outcome of this final meeting and the students' written reports confirmed that most of the aspects of the experience had been satisfactory. The timing (early June) was rated as excellent by all; as for the duration, most expressed satisfaction with this, although some thought a longer period would be beneficial. The course journal and appraisal essay had provided motivation and were felt to be useful.

The objectives of the programme were broadly endorsed in the final reports, although the response to certain objectives had been rather mechanical (for example, a full day spent talking to company safety officers), and it was felt that some way of indicating the optimum depth of treatment must be found. The conclusion was reached that ideally students should be attached singly to companies, as was the general rule, although in the two cases where students were attached in pairs they did not seem at a great disadvantage.

Students' comments

The students' appraisals suggest strongly that they considered the experience to have been very valuable and to have had a marked effect on their attitudes towards industry. This is exemplified in the following quotations from the written reports:

> 'I regard the inclusion of such a scheme as essential for any prospective teacher rather than merely useful.'
> (This sentiment was echoed by most of the students.)
>
> 'What really fascinated me was the diversity of jobs . . . I never considered that anyone on the shop floor could be anything but unskilled – I was proved wrong with a vengeance!'
>
> 'I think the real value of the scheme is the fact that one is free to question people at all levels quite uninhibitedly.'
>
> 'I have made contact with people in industry and from this I hope that I will be able to arrange further interaction in my future teaching career.'

'I am now able to put my role as a teacher into a broader context and feel a sense of purpose . . .'

'At the end of the fortnight I was introduced to a teacher who will be taking part in the CBI secondment scheme. After talking to him, I see the need for all teachers to have a period in industry as, to put it mildly, his ideas seemed bigoted.'

'Nearly everyone I spoke to said that if I need further help I should not hesitate to contact them, so a link has been formed which I will try to maintain.'

'I think that (GCE) examiners should spend some time in industry and other working situations in order that they might rethink what they are dictating to teachers in relation to the curriculum.'

'It is difficult to tell how the fortnight's experience will affect my teaching; I can only say I feel that any broadening of experience is beneficial when considering that as a teacher one is dealing with many people's lives.'

'It has enabled at least one potential teacher to think about what happens to children after they leave school.'

'I am more aware of the problems that other workers have to deal with every day, and I am more tolerant of what seem to be inadequacies of industry.'

'. . . apart from educating myself, I will be able to give quite accurate information to school-leavers about working in the outside world.'

'There is a tendency for teachers to consider their own role in society as being unquestionable and this is reinforced by the sheltered classroom environment where a teacher is often only answerable to his own conscience.'

'. . . my visit to the company provided me with contacts which will, I hope, enable me to arrange visits for the children I will teach, and was an opportunity to collect material which I will be able to use in the classroom.'

'As a teacher, I ought to know about factories, mines, farms; in fact a whole variety of environments. Not all of my pupils will be Oxbridge candidates – far from it; and I, as a teacher, should have some conception of what life is like in non-academic fields.'

'I have been very surprised by the usefulness of this course: to be perfectly honest. I didn't realise, as a language teacher, that I would benefit from it to this extent.'

'The engineering apprentices were uniform in their lack of appreciation of careers guidance in school. One thing that did surprise me was the types of jobs (with good careers prospects for conscientious and hard-working kids) that were available for the completely non-academic child – in fact those regarded as unexaminable and failures at school.'

'The scheme should be made compulsory for all students next year and perhaps a paper should be published on the present exercise!'

Industrialists' comments

The result of the initial 'industrial experience' fortnight has been sufficiently encouraging for University College's Department of Education to repeat the exercise for students currently in training. Reactions from the employers who participated in 1979 have been

most favourable; and, moreover, they said they would be happy to accommodate students again this year.

Employers recognize the need for teachers to have realistic attitudes about industry, and many of those involved in the scheme stress the importance of some contact with industry during teachers' initial training. As one of the personnel managers in a participating firm remarked, 'Teachers should know what industry is like; after all, the majority of their pupils will ultimately be employed in it.'

Another manager, in a company involved in both the students' scheme and the CBI scheme for serving teachers, feels that the attitudes of students are less entrenched than those of teachers with several years of teaching experience. He observes that most of the teachers from local schools involved in liaison with his company are young, recent entrants to teaching, reinforcing his suspicion that some broad industrial experience is valuable for teachers at the start of their careers as it might dispose them to maintain links with local industries in later years.

Future plans

We hope to increase the extent of company participation by approaching other large industrial and commercial enterprises in the region. The students were insufficiently prepared for their fortnight's experience in 1979, and it is intended to run a short induction course as part of the 1980 exercise. Additionally, it was felt that the assessment of the effects of the course was deficient; a more systematic attempt must be made to obtain feedback from the students and the companies – especially evidence of students' attitude changes.

Teachers need to have sensible, well founded ideas about industry, and to be aware of the vital role industry plays in society; the 'bird's eye view' afforded by a fortnight's industrial experience structured along the lines this article discusses probably goes some way towards satisfying this need. In the present climate of curricular and social change such an experience is surely an indispensable part of every teacher's professional training.

Acknowledgement

The writer, on behalf of the Department of Education at University College, Cardiff, wishes to thank all the companies which participated in the PGCE 'industrial experience' described in this article. The department is most grateful for the time and energy they devoted to making the exercise so rewarding and successful.

Based on an article published in 'Education for Development', Journal of the Department of Education, University College, Cardiff.

The role of ODA's education advisers

Roger Iredale
Education Adviser, Overseas Development Administration

British policies to help the economic and social development of less developed countries are formulated and carried out by the Overseas Development Administration (ODA) which became part of the Foreign and Commonwealth Office in mid-1979. Thus the ODA is responsible for the management of Britain's overseas aid programme as a whole.

In 1978 ODA's total gross aid budget was £726 million, of which about 25 per cent went to the UN and EC (European Community) multilateral agencies, the remainder being spent largely on bilateral aid to about 130 different countries through government-to-government aid agreements.

To make informed professional judgments about the schemes and projects on which this money is spent, ODA employs a staff of professional advisers with expertise not only in education, but also in employment, engineering, medicine, natural resources (including agriculture and fisheries), nutrition and social development. These advisers are selected for their professional experience in their own field in both Britain and overseas countries. The education team, for instance, has a multi-discipline composition; almost every sector of education is represented – from the infant and primary school level to university teaching and adult education. In addition, members of the team have lived and worked in South America, the South Pacific area, South Asia, the Middle East, many African countries and other continents and regions overseas.

Though this experience includes English language teaching and further education, the ODA receives advice from several bodies: for example, on English language teaching from the British Council; on technical education from specialist advisers at the Technical Education and Training Organisation for Overseas Countries (TETOC); and on university education through the Inter-University Council for Higher Education Overseas (IUC). As well as advising on and supervising technical and professional aspects of specific aid proposals, in the light of their knowledge of the country concerned, ODA advisers are expected to maintain links with institutions in the United Kingdom, and to advise on technical questions submitted by overseas governments (whether or not concerned with aid), on recruiting British personnel for service in countries overseas, and on training overseas students in Britain.

The Administration's six education advisers, for example, maintain close links with many educational organizations and institutions in the United Kingdom; they represent ODA at conferences in Britain and abroad; they are involved in interviewing and selecting British teachers and educational administrators for service overseas; they advise on the provision of books and library facilities; and they help the British Council in placing educationists from developing countries on training courses at British higher education institutions.

Travel overseas

The life-blood of the education adviser's work, however, is frequent overseas travel to those countries which are the main recipients of aid to examine in detail the effectiveness of specific inputs and explore and report on proposals for future educational assistance. It is the adviser's duty to make regular visits (amounting to about three months a year) to the countries within the geographical area for which he or she is responsible. Working closely with the British High Commission or Embassy and with the British Council representative, where there is one, the adviser will meet government officials, and visit institutions for talks with the people involved with a view to drawing up a list of recommendations and observations.

An overseas tour will usually last for at least three weeks and take in several countries. The adviser's daily activities on a tour are varied; they will include visits to schools, universities and other institutions in urban and rural settings in order to meet ODA-funded personnel in post or assess proposed projects, and discussions with ministers and senior officials about Britain's capacity to assist with the country's training and manpower needs. Often the adviser will come under pressure from various groups and individuals; for instance, expatriate teachers eager to lobby someone from 'back home' on whom a pent-up irritation or frustration may be pinned, or an academic pressure group who see aid as a means of achieving the expansion of their department or cherished project. Faced with limited resources and conflicting claims for assistance with worthwhile but competing causes, the adviser has to maintain, politely but firmly, an informed, objective stance. The detail and comprehensiveness of his pre-tour briefing from ODA itself and from organizations like the IUC and TETOC are crucial factors; so, too, are the advice and support offered by his colleagues at the High Commission/Embassy and by the British Council staff on the spot.

Body of background knowledge

Above all, whilst overseas the adviser will rely on a body of detailed knowledge derived from working continuously at headquarters over months and years on the educational and other aid problems of the specific group of countries in which he specializes. At his desk in London he will already have encountered many of the questions that will arise on tour; moreover, he will have met many of the senior officials of his 'parish' on their occasional visits to Britain, and will have been involved in the preliminary briefing, and even appointment, of British teachers and administrators temporarily seconded to key posts in the countries concerned. After a number of tours he will have become a specialist not just on the formal education systems of many countries, but on topics that interlock with the education system and include the non-formal sector. Through contacts with fellow advisers in fields such as social affairs and medicine he will have learned much about employment, health, nutrition, industry, agriculture and the extent to which these and other vital areas of the economy make demands on educational institutions.

The adviser's roles

The following constraints affect an adviser's work:

1. He has to remember that first and foremost he is an adviser to his own administration (the ODA) and not to the overseas government. It is not for him to influence the educational policies of overseas governments, except as a consequence of deciding what can and cannot be supported within the overseas government's educational aims and objectives.

2. His is a collaborative and cooperative role: his task is to listen, question, evaluate and discuss on a basis of mutual and shared interest in socio-economic development.
3. He has always to bear in mind that he is supporting ideas and projects *because they play a key role in a country's overall development:* he must beware of being attracted to a scheme merely because it is educationally attractive.

The rationale for every proposal must lie in the context of socio-economic development, for when the adviser returns to headquarters his educational recommendations will have to compete for limited resources with other development schemes, such as industrial or agricultural projects. This is particularly true where recommendations relate to capital expenditure on buildings or equipment rather than training and technical expertise: at headquarters a recommendation for laboratories for a training college may well have to compete with a proposal for a new factory, dam, or irrigation scheme.

Problems and perspectives

No work that has breadth and variety can remain static. There are the constant pressures of change arising from alterations in government policy and internal reappraisal of role, function and organization. One or more of the following are perpetually under review: advisers' organizational relationships with their colleagues and other departments; the amount of time spent on geographical and functional duties; the extent to which administrative structures allow advisers to help set up and monitor projects in which education and training may be incidental to other disciplines.

The work may require the capacity to see problems in broad perspective, but it also demands an attention to detail. It calls for patience and the willingness to adopt a low profile (*when politic*) and to recognise that advice can always be disregarded and that no idea bears the copyright of its originator. Advice of an official or personal nature will constantly be requested by individuals and groups, but when given it will often be set aside and apparently ignored; however it may re-emerge later in some other guise.

To summarise, the work of the adviser is an exciting exercise in the application of past and present experience to a wide diversity of changing human situations.

The ODA: a background note

The Overseas Development Administration (ODA) came into being in June 1979 when the Secretary of State for Foreign and Commonwealth Affairs assumed full responsibility for the overseas development work hitherto performed by the Ministry of Overseas Development (ODM). The Minister responsible to the Secretary of State for this development work is known as a Minister of State for Foreign and Commonwealth Affairs and Minister for Overseas Development.

ODA – in consultation with other departments concerned – formulates and carries out British policies to help the economic and social development of less-developed countries. It is responsible for the management of the aid programme as a whole. This includes the allocation of resources to the multilateral aid agencies and to the EC's aid activities, to individual country programmes and to the Commonwealth Development Corporation, and the division of resources between financial assistance and technical cooperation. ODA is responsible for the negotiation of the inter-governmental agreements under which aid is disbursed; the terms on which aid is offered, whether on loans or grants and including the methods of procurement;

the appointment and terms of service of British experts; relations with international organizations concerned with development assistance, such as the specialized agencies of the United Nations and the Development Assistance Committee of OECD; and relations with the Commonwealth Development Corporation. For development purposes ODA also finances wholly or in part research undertaken in connection with overseas development by institutions and other professional bodies in the private and public sectors.

On-the-spot advice on the planning and execution of development programmes is supplied by ODA's five Development Divisions, strategically sited overseas. Each Division has a multi-disciplinary team whose subjects are relevant to the area in which it operates: South East Asia, Central and Southern Africa, East Africa, the Caribbean and the Middle East. In addition, each British High Commission or Embassy has at least one or two people responsible for development work. Finally, ODA has its own Disaster Unit which is able to take swift action where help is needed urgently, such as when large-scale flooding or earthquakes occur.

Trends 1980/2

Exclusion and suspension from school

David Galloway
Formerly Fieldwork Director, Sheffield School and Home Project, and Senior Educational Psychologist, City of Sheffield Education Department

Although exclusion and suspension involve a tiny minority of the total school population, the professional time and energy spent on the children involved is enormous. David Galloway reports the findings of a retrospective study of exclusion and suspension from Sheffield schools over a four-year period. The evidence shows that social deprivation or disadvantage in the catchment area is not in any obvious way related to the school's use of exclusion, and that there are substantial and consistent differences between schools in their use of exclusion and suspension.

Faced with behavioural problems which cannot easily be resolved within his school's ordinary pastoral and disciplinary framework, a head teacher has to decide which of the two procedures open to him – exclusion and suspension* – to adopt. The problems that can result from either course of action can be as intractable as those which precede them. Recognizing this, Sheffield Education Department started holding a weekly meeting to coordinate enquiries about

* In Sheffield exclusion means that the pupil is kept at home pending discussions between his parents and the school's senior staff. No time limit is fixed; it is assumed that with reasonable cooperation from parents and pupil, it should be possible to arrange a rapid return to school. Suspension is more serious, since the school is unlikely to readmit the child, at least in the foreseeable future. The chairman of the school's governors is informed, and the parents are told of their right of appeal. All cases of exclusion and suspension are reported to the chief education officer.

children whose behaviour called for drastic action, to make arrangements for the future education of such children and to consider the adequacy of existing resources for them.

Two broad areas of interest

The weekly meeting provided a regular opportunity for education officers, psychologists, educational welfare officers, head teachers and members of other services such as social work and probation to exchange information and ideas. Two broad areas of interest emerged early on. The first concerned the size and nature of the problem. Although research has suggested that there is no association between a secondary school's size and the level of persistent unjustified absenteeism,* some people still inclined to the view that large and, by implication, impersonal schools would have higher exclusion rates than smaller schools. Others believed, equally strongly, that the problem was confined to schools with catchment areas that abounded in social problems. Some people also wondered whether the increasingly lively debate about school discipline, both within the media and within the teachers' associations, might reflect – or be reflected in – an increase in exclusion rates.

The second main area of interest concerned the pupils themselves. No one doubted the severity of the problems they had presented to their schools. Discussion focused on whether these were psychiatrically sick children who needed treatment, and if so, what form of treatment, or simply deviant, disruptive pupils who required firm control. How should the authority respond to them? Should special centres be set up outside the ordinary system, or should scarce resources be used to help schools to deal with their own problems? This last suggestion was further complicated by many teachers acknowledging that certain aspects of school policy, organization and ethos could exacerbate a child's original problems, and thus contribute to eventual breakdown.

Assistance from the DES enabled us to investigate both these areas as part of a wider programme of research on problems of disruptive behaviour in school and on unauthorised absence from school.† Information on exclusion and suspension over a four-year period was obtained from LEA records and covered all thirty-eight secondary schools in the authority, their feeding primary schools, and also all special schools. The total number of children in Sheffield schools at that time was just over 100,000. The results described here are mainly based on this study, though mention is also made of our research on suspended pupils and their families. In this case information was obtained from interviews with the pupils, parents and headteachers involved.

Overall size of the problem

Observations made in this article relate to children who were suspended or excluded from school for at least three weeks. Figure 1 shows the number of these pupils in the four years 1975–79. It can be seen that the peak reached in 1977–78 eased the following year to just below the level for 1976–77. It is possible that the peak in 1977–78 reflected a greater awareness among head teachers of the procedures the authority had been developing for cases of exclusion and suspension, with correspondingly greater willingness to investigate their effectiveness by using them. Nevertheless the evidence in Figure 1

* See Galloway, D. 'Persistent unjustified absence from school' in *Trends in Education*, Winter 1976.

† See Galloway, D., C. Ball and R. Seyd 'Absence from school and behaviour problems in school' in *Therapeutic Education*, Volume 6, No. 2, 1978.

does not support the view that the problem is escalating uncontrollably. And it needs emphasizing that the offenders constitute a very small proportion of the total number of children in the authority's schools. There was no year in which exclusions from primary schools in Sheffield exceeded 0·01 per cent (one per ten thousand on roll),

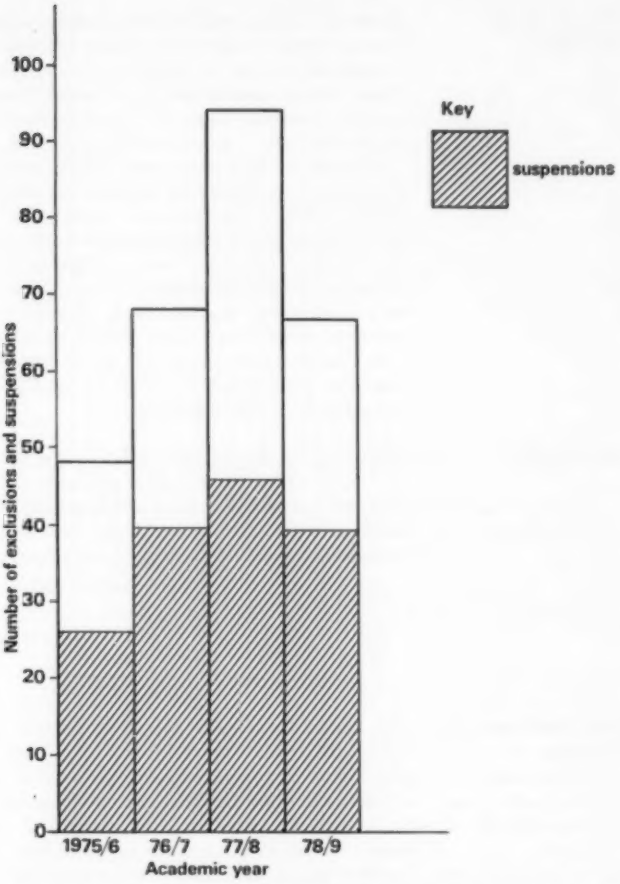

Figure 1 Suspension from school and exclusions of at least three weeks reported to the chief education officer for Sheffield 1975–79

while in secondary schools the peak was 0·38 per cent among fourth-year pupils in 1977–78.

Part of the reason for the lower primary-school figures undoubtedly lay in the greater availability of special-school places for this age group. Within secondary schools, there was a consistent age-related increase in the number of boys excluded, with a peak in the final year of compulsory education. The number of excluded girls showed minimal differences between fourteen-, fifteen- and sixteen-year-olds, and was considerably lower than the corresponding number of boys. It seemed

likely that the peak in boys' exclusion rates in the fourth and fifth years of secondary schooling reflected the difficulty in obtaining special-school places for this age group. (Is it possible that a deviant primary school child is called maladjusted and placed in a special school, while a deviant sixteen-year-old is called disruptive and excluded or suspended?)

Nature of the problem

Exclusion seldom resulted from a single, isolated incident, however serious. Rather it reflected a gradual build-up of tension. There was a noticeable increase in exclusion rates in November, February and March: maybe teachers and pupils are affected by short days and bad weather. Moreover those are times of the year when the previous holiday has been forgotten and the next one is far distant.

Although the cause of exclusion was almost invariably a slow increase in tension, the precipitating incidents are still of interest. Contrary to popular belief, actual violence to teachers was seldom reported. The most frequent precipitating incident was abusive, insolent or threatening behaviour towards a teacher, followed by bullying, unspecified bad behaviour and disobedience. Truancy was seldom the only reason for exclusion, but was sometimes reported by head teachers as an important contributory factor. Refusal to accept punishment (almost always corporal punishment) also quite often led to exclusion. In such cases the child would normally be readmitted when his parents supported the school's decision.

Outcomes

Only twenty of the 266 excluded or suspended pupils were placed in the LEA's centre for disruptive adolescents. The majority of pupils admitted to this centre were admitted because final breakdown was imminent, rather than because it had already occurred. The five most frequent outcomes of exclusion or suspension were that the pupil:

(i) was readmitted to his original school;
(ii) reached school-leaving age;
(iii) was transferred to another ordinary school;
(iv) was placed on home tuition;
(v) was moved to a special school.

Differences between schools

The schools included in the study differed substantially and consistently as regards the number of pupils excluded and suspended (see Figure 2). Moreover, the differences between schools were consistent from year to year, and did not result from one exceptional year. With few exceptions, the number of suspensions was fairly closely related to the number of exclusions. (One exception is the fourth school from the left in Figure 2, which excluded a relatively large number of pupils, but suspended relatively few.) Six schools reported no exclusions or suspensions in the four-year period.

The next question was whether the schools which used exclusion most frequently served similar catchment areas. We found that in this respect exclusion differs sharply from persistent absenteeism. At least in Sheffield, if you know the number of pupils authorised to receive free meals, you can predict the number of unauthorised absentees with a high degree of reliability (although you cannot predict *who* the absentees will be). No such nearly-linear relationships were found in the case of exclusion and suspension.

A notable finding was that schools with the most disadvantaged catchment areas were neither more nor less likely than other schools to exclude pupils. As with persistent absence, the school's size did not appear at all relevant. It remained possible, however, that excluded

pupils generally came from the most disadvantaged parts of their school's catchment area. Preliminary analysis gave a confusing picture in answer to this question. At some schools almost all the excluded pupils lived in the most disadvantaged areas; at other schools, this was not the case.

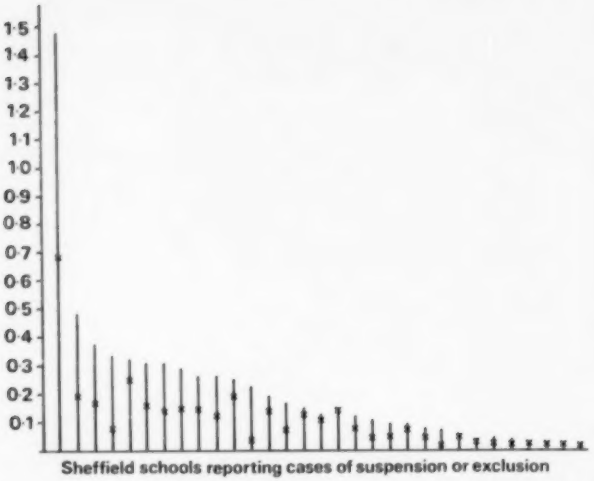

Figure 2 Number of pupils suspended from secondary schools, or excluded for at least three weeks as a percentage of the total on roll in each school, 1975–79

NOTES: (*a*) Six schools reported no exclusions or suspensions
(*b*) The portion of each bar graph below the 'x' distinguishes suspensions from exclusions of at least three weeks' standing

Having established that exclusion rates were not related to catchment-area variables in any obvious way, the next stage was to seek explanations within the school's academic, social and disciplinary organization. Evidence showed that schools which on secondary reorganization had incorporated a former selective school tended to exclude more pupils than schools which had not, though this was by no means always the case. It also emerged that schools with high exclusion rates tended to have high rates of referral to special schools for ESN(M) and maladjusted pupils, with no great overlap between exclusion and special education referrals. On the other hand, neither the organization of remedial provision nor policy on ability grouping seemed to be related to exclusion rates.

Consideration was next given to the possibility that some schools might use exclusion in preference to other sanctions, such as corporal punishment. As part of a wider study, interviews were conducted with random samples of second- and fifth-year pupils in three secondary schools which reported exclusion relatively often, and three which reported it very seldom indeed. These schools varied greatly in the reported prevalence of corporal punishment, but this variation was not related to the number of pupils excluded. A similarly inconclusive pattern emerged when pupils were asked about their attitude towards and experience of school rules, their interest in school work, and about aspects of the school's pastoral care facilities.

Schools' idiosyncrasies

Perhaps surprisingly, it appeared that the principal determinant lay neither in a difficult catchment area, nor in any consistent pattern of school organization or ethos. Instead it seemed that exclusion rates, and also rates of referral for special education, were idiosyncratic to each school. This implies that the likelihood of a secondary-school pupil being excluded or referred for special schooling depends at least as much – and probably more – on the particular school he happens to attend, as on any constitutional factors affecting his behaviour, or the difficulties in his family, or possibly even the actual behaviour he presents at school.

It is important, however, to place this statement in context. The fact that policy on exclusion appeared to be idiosyncratic certainly does not imply that it was necessarily arbitrary. Moreover, it can be argued that schools must be judged by the achievements of the majority of pupils. It is worth pointing out that some of the schools with the highest exclusion rates were highly sought after on the authority's parental option scheme for secondary-school places. Moreover, there was sometimes evidence that the parents' judgement was vindicated by the school's success in such areas as examination results.

It should also be emphasized that the study of suspended pupils and their families revealed a wide range of problems which were not confined to any one socio-economic group. The children tended to be severely retarded educationally. Two-thirds of the boys and a surprising 87 per cent of the girls were known to the police. Truancy was reported by nearly four-fifths of the parents. We also found evidence that suspended pupils were a particularly vulnerable group in other ways; for example, they were far more likely than their peers to have suffered a severe illness or serious accident.

Conclusions

Our surveys have shown that exclusion and suspension from school affected a small number of pupils, but presented a complex, time-consuming, and expensive problem for teachers, educational psychologists and administrators. Unlike persistent unauthorised absence from school, the problem was not most prevalent in socially disadvantaged areas, nor was it in any way associated with size of school. On the other hand, exclusion rates did vary very considerably from school to school, and schools with high exclusion rates tended also to have high rates of referral for special education. The evidence did not support the view that schools with the lowest exclusion rates experienced fewer, and less severe, problems from their pupils than schools with the highest, nor, conversely, that schools with the highest rates experienced exceptionally many or severe problems. The implication was that some secondary schools continue to cater for certain pupils who – had they attended a different school – might well have been candidates for exclusion or special education. The crucial questions, of course, are: (i) whether the schools which retained their slowest and most disturbing pupils are in fact able to teach them successfully; and (ii) if so, how and at what expense is this achieved? But that, of course, is a whole new project!

Trends 1980/2

Class size?—the wrong question

Brian Kay
HM Inspector

Trends has carried two previous articles on the subject of class size. Both, in different ways, emphasized the difficulties of finding a research answer to the question: do pupils learn better in smaller teaching groups than in larger ones?, and both, in different ways, came to the conclusion that more research is needed. Brian Kay suggests that the prospects of this sort of 'fishing' producing a worthwhile catch are negligible; and that the question, at least when put in this form, is unanswerable. He does not deny, however, that if the question were redefined, it might produce some useful information.*

The two previous articles on class size have shown the magnitude* of the problems faced by researchers in this field. Dr Burstall*, for example, points out the difficulties of isolating one variable in the complex educational process, except by setting up an experimental situation. This point is worth pursuing further. Ryan and Greenfield† list what they see as the main elements in school experience which affect pupils' performance:

A. Background and correlated factors
   1. Pupil characteristics
      a. Community background
      b. Home background
      c. Individual abilities and motivation
      d. Previous learning and experience
      e. Age; sex
   2. School characteristics
      a. School-building design
      b. Facilities: library, gym and so on
      c. Special equipment: TV, audiovisual, and so on
   3. School services
      a. Health
      b. Social service
      c. Counselling and psychological
      d. Administration
      e. Professional development
   4. School programmes
      a. Variety and extent
      b. School climate and leadership
      c. Home-school relationships
      d. Remedial and special programmes

* Burstall, Clare. 'Time to mend the nets: a commentary on the outcomes of class-size research' in *Trends in Education*, Autumn 1979, and Cullen, B. D. 'Lessons from class-size research – an economist's perspective' in *Trends in Education*, Winter 1979.

† Ryan, D. W. and T. B. Greenfield. *The class size question*. Toronto: Ministry of Education, Ontario, 1975.

5. Classrooms
   a. Number of pupils
   b. Number of adults
   c. Subject
   d. Methodology
   e. Climate and leadership
6. Teacher characteristics
   a. Training and length of service
   b. Personality
   c. Intelligence
   d. Abilities and attitudes

B. Learning-related experiences in the school environment
   1. How are pupils, teachers and others involved?
   2. What experiences do they have in terms of:
      a. Expectations for the environment?
      b. Perceived opportunities and problems?
      c. Efforts to learn, help, teach?
      d. Contacts with others?
      e. Contacts with physical resources?
      f. The learning programme inside and outside class?
      g. Feelings of accomplishment or failure?
      h. Judgments about the school and classroom?
   3. What decisions do they make in schools and classrooms to:
      a. Assign and arrange resources?
      b. Seek new learning situations?
      c. Select or sort people into learning situations?
   4. How do they know when learning has occurred?
      a. How do they measure it?
      b. How do they clarify it?
      c. What decisions are consequentially made?

Many of these are broad and complex issues – for example B 2f by itself could be broken down into a large number of sub-items concerned with the different subjects learned and the different styles of teaching and learning adopted. It will be noted that classroom numbers (A5a) is only one of these variables.

Difficulties in defining class size

Dr Burstall's article reminds us further that these are almost certainly not isolated variables – they interact one upon another in different degrees to such an extent that it is exceedingly unlikely that differences in pupils' performance could be attributed with any degree of confidence to differences in any one variable. One has only to consider the likely inter-relation of, for example, size of class group, degree of homegeneity both socially and academically of class group, curriculum area being studied, styles of teaching and learning adopted, the experience, skill and temperament of the teacher, the ethos of the school in which the class is functioning – to mention only a few – to recognise the complexity of the problem.

The actual definition of class size presents a further difficulty. Table 1 records the imaginary but not improbable series of registration groups through which four pupils passed in the course of their school career, registration groups being chosen as one of the more easily defined groups to which pupils are attached. In terms of class size, assuming the criterion to be the pupil's performance in the last year of compulsory schooling, pupil A enjoys the smallest class size in that year – and the majority of studies concerning class size have related

performance to the class size at the time of testing, often in terms of the increment in test scores in the course of the year.

But it seems likely that only a few areas of knowledge depend solely on the immediate past circumstances of learning, unless one is concerned simply with short-term recall. If it is considered likely that present performance will be most strongly influenced by the average class size over both the current year and, say, the preceding two years, then pupil B has enjoyed the smallest class size. If, however, a pupil's performance at 15 is likely to be the cumulative effect of influences, including class size, over the whole of his secondary schooling, or indeed his whole school experience from 5 to 15, then pupil C has enjoyed the smallest average class size – pupil C having passed through a small local primary school and gone on from there to a small comprehensive school.

An alternative possibility is that at certain critical stages in his development a failure to grasp a particular set of principles may affect the whole of a pupil's subsequent learning process, and it is at least conceivable that individual failure to understand may be associated with being in a large teaching group in which a teacher will arguably have less time to devote to individual problems. If this were to be the case the configuration of the pattern of the varying class sizes might prove to be more significant than their average and the experience of pupil D is relevant. He hit a sudden surge of population on entry to a junior school, which was relieved two years later with the aid of a demountable classroom and an additional teacher. His performance at 15 might depend more upon his experience in those large classes during two key years of his primary education than on the average class size over the whole of his education or over the previous two or three years.

Table 1 Registration class sizes

	Infant				Junior				Secondary			
Year	1	2	3	4	5	6	7	8	9	10	11	12
Pupils												
A	25	32	30	31	33	35	35	32	31	32	30	25
B	24	31	28	30	34	35	34	31	30	24	27	28
C	12	14	15	21	19	20	22	27	26	28	28	28
D	24	30	33	40	42	34	33	30	28	30	28	29

All that has been attempted in Table 1 is to give the size of the registration groups to which the four imaginary pupils belong in each year. While this may roughly equate with class size in which they have actually been taught throughout much of the week at the primary stage, it does so much less in the first three years of secondary school and less so again in the last two years. To judge the impact of class size upon the learning of a pupil in any one area of the curriculum it would be necessary to draw up a similar table for that part of the pupil's curriculum. If we are concerned with a broad range of curricular outcomes the problem is an obvious one. In view of the difficulties of definition it is perhaps not surprising that research in this area has so far been inconclusive.

Pupil performance

When we turn to the question of what children have learned as a result of their educational experiences, we find a wide range of criteria by which to judge their achievement. Ryan and Greenfield list the following headings:

Scholastic achievement
Attitudes and adjustment
Educational choices
Careers
Behaviours as citizens, as parents or in other adult worlds
Aspirations
Beliefs; moral and ethical values

Each of these is in itself complex – the whole structure of the examination assessment, for example, exists primarily to measure just the first of these and yet, as most people would agree, fails to assess many of the more imponderable aspects of academic achievement. If pupils' performance is to be used – and it clearly must be – as the main measure of the effectiveness of the educational process, then the longer-term outcomes, though they may be equally important, can only form part of a longer-term evaluation and their interpretation in terms of school experience becomes progressively more difficult to determine as post-school experiences increasingly influence performance and behaviour.

But the difficulties of longer-term evaluation make it all the more necessary to ensure that the full spectrum of short-term outcomes is adequately assessed in determining the effects of the educational process. Beside scholastic achievement, and of equal importance as outcomes of education, are pupils' attitudes, their educational and career choices, their aspirations and values. While it may be a counsel of perfection to suggest that an evaluation of the educational process must embrace all these in addition to the broadest possible assessment of academic achievement, nevertheless the extent to which the forms of assessment adopted fall short of this ideal affects one's judgment of their validity. It may, of course, prove impracticable to assess all these outcomes; it may also be the case that many of them will tend to move together in relation to the education process being tested, so that scholastic achievement could be taken as a paradigm of education outcomes more generally, though we know too little to be sure of this. But certainly the use of tests of basic reading and arithmetic as the sole measure of educational outcome is barely less adequate than the evaluation of the performance of a piece of music in terms of recorded decibels.

It may not be inappropriate here to suggest that it is the narrowness of the range of many assessment instruments used in research and elsewhere that has given rise to the conflict between those who believe that education can be evaluated in terms of outcomes and those who claim that it is the quality of educational experience which should be the sole criterion. In education it is not better to travel hopefully than to arrive, and experience which has no desirable end product is valueless. But the end products of some of the most valued pieces of educational experience are the most elusive in terms of measurement. The more widely pupils' performance can be assessed and evaluated, the less strong will be the case for focusing evaluation on the process by which this has been achieved.

Thus we are led to an impasse. Class size turns out to be an elusive concept which is in any case only one of a complex tangle of influences brought to bear upon children in schools. These in turn lead to an

almost equally tangled set of outcomes for pupils, many of the most important of which are difficult to assess with any accuracy. Unless the influences of class size (whatever we mean by it) are strong and consistent (and the evidence such as it is suggests that they are not) then the chance of establishing a causal relationship between it and the range of desirable pupil outcomes is remote.

Alternative opening

If the class-size issue turns out to be a blind alley, is there any alternative opening we might look for – in order to pursue the currently very pertinent question of the relationship between teachers as the costliest of the resources applied to the educational process and pupils' performances.

The first thing that must be said is that numbers appear to be less important than quality, appropriateness of qualification and style of contact between teachers and pupils. Rutter* suggests that more important than teacher numbers are such basic matters as teachers' attitudes to punctuality in the classroom, the attention they give to the marking of books, the giving of praise and encouragement to their pupils. In *Aspects of secondary education*† HM Inspectorate refer to the disturbing examples of teachers working 'at or beyond the limits of their knowledge or of their professional confidence'.§ In *Primary education in England*‡ they report the failure by some teachers in some areas of the curriculum to match the level of work to pupils' capacities. These are only examples of the ways in which the quality and style of teaching appear to influence the performace of pupils.

Teacher numbers

But teacher numbers are also important. In *Aspects of secondary education* we find shortage of time recorded as a serious problem. A major part of the problem is lack of time – 'time for the marking itself, which may be particularly heavy in those subjects which generate large quantities of written work; time for teachers within subject departments and across departments to work out their policies and agree on their practices.'‖

The time available hinges on two inter-related issues – the numbers of teachers available to a school of a given size and the way in which they are deployed. As far as teacher numbers are concerned, even in schools of similar size and character ranges of pupil-teacher ratio as wide as 11:1 to 19:1 could be found¶. It would certainly be reasonable to assume that for a school of a given size and structure working within a given set of circumstances effective operation depends upon the pupil-teacher ratio falling within a certain range – a minimum below which there is a marked drop in effectiveness and a maximum beyond which further benefits, if any, become progressively less. It would be surprising if that range were as wide as that quoted above, which amounted to a difference of over 50 teachers for the two schools, each with 1,400 pupils on roll. The necessary minimum number of teachers needed to sustain a given curriculum can certainly be worked out

* Rutter, Michael, Barbara Maughan, Peter Mortimore and Janet Ouston, with Alan Smith. *Fifteen thousand hours: Secondary schools and their effects on children*. London: Open Books, 1979.

† HM Inspectorate. *Aspects of secondary education in England. A survey by HM Inspectors of Schools*. London: HM Stationery Office, 1979, £6·75.

§ *Op. cit.* Chapter 12, Paragraph 8.

‡ HM Inspectorate. *Primary education in England. A survey by HM Inspectors of Schools*. London: HM Stationery Office, 1978, £3·50.

‖ *Op. cit.* Chapter 12, Paragraph 14.

¶ *Op. cit.* Chapter 4, Paragraph 4.5.

theoretically. It is less easy to test empirically the benefits of increasing this number because the other elements of quality, appropriateness of qualifications and experience on the one hand and deployment and utilisation on the other have powerful effects.

Even where staffs very similar in numbers, range of ability and experience are present they may be used in very different ways – one may take as an example the school which makes its first priority the maximum staff contact time and which therefore minimizes class size in the expectation that this policy will make it possible for these desirable elements such as pastoral care and guidance to emerge naturally. Another, recognising the need for a range of extra-curricular involvement by staff, gives generous allowances of staff time to these and reduces class-contact time accordingly. We have little evidence as to which style of management and therefore of pupils' education is the more effective.

Schools also differ markedly in their allocation of staff both across and within the different year groups and their policy in this respect reflects the school's priorities. Again, though these differences powerfully affect the circumstances in which pupils learn, we do not know to what extent or in what ways they affect their achievement.

Teacher-pupil ratio and teacher deployment

May it not be that future research should be focused not on class size but on the related issues of pupil-teacher ratio, deployment of staff within institutions and use of staff time? The complexities of input and output variables still remain, and education cannot be reduced to a simple fully controlled experimental situation. But the Rutter research has pointed the way to using a range of measures which, though not necessarily appropriate for a wider study, may well point the way ahead.

The following range of variables was investigated in that study:

Status and sex composition of schools
Number of pupils and amount of space
Age of buildings and number of sites
Pupil-teacher ratio and class size
Organisation for pastoral care and so on
Academic emphasis (using ten different indicators)
Teachers' behaviour in front of their classes (using seven different indicators)
The punishment policy of the school (using six different indicators)
The support and praise given to children (using five different indicators)
The environment provided for children (using six different indicators)
The responsibilities given to teachers (using four different indicators)
The stability of groups within the school (using two indicators)
The skill and experience of teachers

In addition to these matters over which the school and its staff have control, Rutter also took into account such variables as the academic and social status of pupils on entry into the school. Measures of children's performance included records of attendance, behaviour (including delinquency) and academic attainment (making use of examination performance).

An institutional approach to the problem with which this article has been concerned has a number of advantages. On the one hand pupil: teacher ratio rather than class size does at any rate provide a relatively stable object of study; the class:contact ratio provides a further firm

piece of evidence; the ways in which teachers are deployed and the use of their time both inside and outside the classroom can be broadly categorised; on the other, the larger aggregation of measures of pupils' performance possible at the institutional level may provide a more stable index of effectiveness than one based on the smaller class group. The identification from among all the influences upon pupils' performance of the effects of the numbers and deployment of teachers and the use of their time will not be easy. But at least the questions have more relevance to educational practice than do those concerned purely with class size.

The answers that the researcher can offer, even if incomplete, will be of significance for the administrator and the teacher, both of whom are concerned ultimately both with the overal numbers of teachers available and with the optimum use of their time and skills.

Trends 1980/2

The International Baccalaureate: a working model of advanced secondary studies

John Jeffery
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The schoolchildren of 1980 will be adults in the next century in a world even more dependent than ours on an understanding of different cultural traditions, and of economic and social structures, and yet in our schools international awareness is still far from being made a reality. John Jeffery sees The International Baccalaureate (IB) curriculum as an attempt to ameliorate this situation.

Competition and even co-operation between nations reveal how little different patterns of education are adapted to the present and future needs of society. In recent years, concern has been expressed about the curriculum in many English sixth forms. This has been stiflingly narrow for those who intend to specialize at degree level, but even more so for those who do not wish to have their studies determined by the assumed needs of the future degree student.

The International Baccalaureate (IB) course is an attempt to meet these two pressing needs – an education that stresses our interdependence as a global community, and that lays down a broad but high-level foundation for further study, or for entry into 'active life'. It is international both in the sense of providing syllabuses for a wide range of subjects that have been developed by international panels of teachers, and also because it is being taught in schools receiving students from a number of different countries. It is a baccalaureate since it is a matriculation qualification recognized by over 400 universities all over the world, including all those in Great Britain, as fully satisfying the minimum entrance requirements for any faculty and any course of study.

The beginning

Teachers in a number of international schools, notably in Geneva and New York, had found considerable difficulty in teaching classes composed of pupils from a variety of education systems who were to be prepared for school-leaving examinations with widely differing syllabuses and structure, and who expected to return to their home country for higher education. Additional difficulties arose through the mobility of students whose parents had diplomatic or business careers, and through the varying educational backgrounds from which the students came. Such students required a course and a qualification that would be acceptable to all university destinations and that would also offer an advanced but balanced education in its own right.

The syllabuses for every subject were developed by international teams and represented the most advanced thinking in each discipline. As the schools teaching the IB were situated in major cities in most continents, the students could, if necessary, transfer schools and follow the same syllabus without losing time in having to adjust to a different educational regime. Above all, the principles of breadth and balance were established, ensuring a full education with the necessary core content.

However, once the course was established at international schools, it was seen by others outside to be a highly suitable model for students in all types of school, and it has gradually been taken into the national education system of several countries since the mid-1970s.

The diploma course

Avoiding the twin extremes of encyclopaedic knowledge – in those countries where nine or more subjects are taken at advanced level – and the narrow specialization of only three – as in the British tradition – the IB requires six main subjects to be chosen – three at Higher Level (approximately GCE A-level standard) and three at Subsidiary Level (equivalent to A/O-level).

Every student opts for one subject from each of five groups: language A (the student's mother tongue, or 'best' language if he is bilingual); language B (other languages); study of man (economics, geography, history, philosophy, psychology, social anthropology); experimental sciences (biology, chemistry, physics, physical science, scientific studies); and mathematics. The sixth subject is another one from any of the groups, except the first, or it could be a distinctive area devised by individual schools and approved by the international teams of examiners, such as art, music, marine biology, photographic science or Islamic studies. In addition, all students have to follow a course in the theory of knowledge, which gives them an introduction to the intellectual foundations of mathematical thought, scientific and historical methods, and aesthetic and moral judgement.

Beyond formal teaching each student is also required to complete one extended essay (of about 4,000 words) on one aspect of one of his main subjects of study, after personal research and tutorial advice from his teacher. Apart from its intrinsic value, an individual piece of work such as this emphasizes the importance the IB programme attaches to the student's own contribution to his course of study.

Finally, in order to provide some compensatory activity to the otherwise strictly cerebral programme of the course, each student has to engage in some forms of creative, aesthetic, social-service or physical pursuit for one afternoon each week, and these activities are recorded on a document annexed to the diploma at the end of the two years. It is envisaged that each student will participate in a range of different cultural, social or sporting programmes during the course.

Syllabus content

The content of the syllabus for each subject has been developed and is reviewed periodically by teams of examiners drawn from a dozen different countries, led by a chief examiner who is typically a university professor or lecturer. At present, seven chief examiners are from British universities and are thus aware of peculiarly British needs. All the syllabuses, together with the detailed administrative regulations governing the combinations of subjects, the marking system and the award of the Diploma, are published in the *General Guide to the International Baccalaureate** which is valid for three years and is supplemented by lists of prescribed books and topics for the appropriate subjects.

Examinations

The IB is also innovatory in certain of its examining techniques. Clearly there is still a need for traditional essay-type examinations, but with language A these are supplemented by face-to-face orals lasting up to thirty minutes each. These oral examinations include a commentary on a passage taken from a set book and detailed discussion of other works studied. With language B there are listening comprehension tests delivered exclusively by specially recorded tapes, and oral examinations between teacher and student recorded on cassette and sent for external marking. In the sciences experiments conducted by students under examination are filmed and marked by an examiner, possibly in another country.

In most subjects a percentage of the final mark total (never more than 20 per cent) is contributed by course-work submitted predominantly during the second year of the course.

Marking

All IB course work and examinations are marked on a scale ranging from seven (excellent) to one (very poor). For each subject an overall mark is arrived at by aggregating the marks in the prescribed proportions. A minimum total of twenty-four marks earns the candidate the Diploma of the International Baccalaureate, provided that the marks have been evenly spread across the subjects offered, although some degree of cross-compensation is permissible. However, no student with a mark of one in any subject would obtain the Diploma, even if his score were above twenty-four. The system thus encourages the breadth of effort that is inherent in the philosophy of the course. Students who do not qualify for the Diploma receive a separate certificate for each subject taken, indicating the grade achieved in the subject, and where these have been quite satisfactory, some students have been able to use them for the purposes of gaining entry to higher education courses.

Attractive alternative

The IB is proving to be an attractive alternative to the three-subject A-level course that sixth form or further education colleges offer. This may be because IB students are genuinely good all-rounders who are loath to select only three of their subjects for A-level study. They may perhaps have just reached the stage of understanding the full implications of various subjects by the end of the fifth form and wish to continue with them in more detail. Or students may, rightly, not have made up their minds so early on what they wish to take at university and may fear that premature specialization will prejudice their qualification for an eventual course. In addition, students often wish to move into the more adult atmosphere of the college, so that

* International Baccalaureate Office. *General guide to the International Baccalaureate*. Geneva: IBO. (Copies are obtainable from the London IB Office, 2 Taviton Street, London WC1H 0BT.)

they can participate in their own academic development through individual study assignments. Others, again, may have been in a single-sex school and wish to study in a mixed environment such as they will find in higher education; they may wish to embark on new subjects or take combinations of subjects not available in school; they may feel that a change of institution, of course, of friends and teachers will prove a new stimulus to their studies.

It must, nevertheless, be said that the IB is not the right course for everyone; for example those who have reached their academic ceiling with O-level, or who have no intention of continuing with an academic programme, those who wish to concentrate on a specific vocational objective, and those who wish to bank on a small core of related subjects – especially if they have had an interrupted or uneven educational background. From our experience at Avery Hill College, however, even students with no thought of going on to higher education have testified to the very tangible broadening and maturing experience they have gained from the course – an experience they felt other courses would have lacked.

Admission to university

During the early seventies British universities and polytechnics all accepted the IB Diploma as fully meeting matriculation requirements, but naturally individual faculties will still, as with GCE A-level students, require IB students to acquire specific grades for admission. As their experience of IB students on degree courses grows and they recognize the superior preparation IB students have normally received, applicants possessing the IB diploma will gradually be treated more advantageously.

The IB office in London has a universities liaison officer who advises students on choice of colleges and courses. Those universities which have taken IB Diplomates i. the past five years have been quick to welcome more such appplicants. Sussex, Kent, Manchester, Bristol and Oxford Universities, and the London School of Economics and University College in London have all regularly accepted IB students and acknowledge their especial suitability for degree courses. Of the first substantial contingent of IB students (fifty) to enter British universities in 1973, six gained first-class honours degrees on graduation in 1976. Since then a steady stream of IB students have qualified each year. In 1979 British universities made 129 conditional offers to IB applicants.

Instead of N & F

During the recent debate on the N and F proposals, several colleges wrote without prompting that they would prefer the IB balanced pattern of studies for sixth formers. They proposed its adoption as a working model of advanced secondary studies that had already passed the test of viability at the national, and indeed the international level. In the words of one college at London University: 'We are extremely pleased to have students with the International Baccalaureate – one member of staff, who is not easy to please, said that he wished all our students took the IB.'

From September 1981 an exploratory study, funded by the Schools Council and with DES approval, will probably be conducted in British schools and colleges to investigate the role the IB could play in the national education system. At this college, at least, our experience so far has been very positive and we should wish to see the opportunities the course offe. s to our students made more widely available.

Global Perspectives in the Classroom

Simon Fisher describes the work of a project set up in 1973 to encourage and support curriculum development in world studies.

A school in the North of England regularly puts on a 'World Day' involving large numbers of parents and many people in the local community. Last year it was India Day, complete with Hindu Temple, village square and bazaar, and Indian food for the whole school. Previous 'Days' focused on the Americas and Australasia. Each is preceded by a term's detailed study of the culture and society concerned.

At a school in Leicestershire virtually all pupils in their last two compulsory years follow a world studies course to either O- or CSE-level. Among its aims are: 'to encourage students to set their thinking about the modern world within a global framework'; 'to foster among students an allegiance to mankind in general'; 'to help students to become aware of the widening gap between the richer and poorer countries, and its consequences'; and 'to encourage respect for cultural diversity'.

A social studies team in a large urban comprehensive is developing a term's unit on rights and responsibilities that puts the emphasis on enabling pupils to experience for themselves abstract concepts like interdependence, trade, prejudice and discrimination. Simulation and role-play are in frequent use – one day the classroom is the venue for international trade negotiations, on another it houses a court of law.

At a school in the Midlands a group of three teachers and eighteen pupils spent a year planning, preparing and raising funds before visiting Tanzania for a month, where they worked for much of the time in a deaf school. The preparation was intense, even including the studying of elementary Swahili. Meanwhile, in the school itself, a working-party is systematically reviewing the whole school curriculum to see in what ways all subject areas at all age and ability levels can reflect a global perspective. The group has power to implement its own recommendations, and is doing so.

World perspective

Those illustrations, all taken from schools recently visited by the field officer of the World Studies Project, give some idea of the kinds of activities the project aims to encourage and support. The World Studies Project was set up in 1973 by the One World Trust, and has been funded successively by the Leverhulme Trust, the Department of Education and Science and, currently, the Overseas Development Administration. It has based its work on the belief that the world should be viewed not as a collection of separate countries but as a system of interacting parts, and that the school curriculum should, as a consequence, be permeated by a world perspective that stresses man's interdependence.

Changes at all levels – economic, social, political, technological and cultural – have transformed the human organization of our planet, particularly in the last 100 years. As a result certain phenomena in modern society can no longer be observed or analysed adequately, and many problems cannot be solved or managed adequately, unless it is recognized that they occur in a far wider context than that of the individual nation-state. A further outcome of this process of change has been that nowadays there is a much increased level of interaction between peoples of different ethnic and national origins. Citizens in modern society need to have a knowledge of and sensitivity towards cultures and societies other than their own if they are to identify their own interests wisely and pursue them without prejudice to the legitimate interest of other people.

The project is concerned with the educational implications of questions such as: What are the major issues and problems confronting world society? What are the causes of the problems and what is their historical, global context? What can be and is being done to tackle them? What sort of world do we want to move towards – what sort of world order as a whole, what kind of organization at national and local levels, and what kinds of opportunity for individuals?

Continuing discussions

During its six years of existence, the project has instigated and extended continuing discussions with, and between, teachers on the way in which objectives, content and

approaches should change to take account of the global dimension.

To this end it has organized fifteen residential courses for teachers and has contributed actively to the design and management of about thirty residential courses organized by others. It has also contributed to some 200 non-residential courses and workshops.

Publications

The project's courses have given rise to a number of publications. *Learning for Change in World Society** is a handbook for school-based curriculum development. It is concerned primarily with practical method and describes a wide range of activities, games and exercises applicable to problems such as: How can pupils be persuaded to take an interest in often apparently remote issues of the kind mentioned above? How can controversial and value-laden questions be handled responsibly? How can teachers prevent their pupils becoming depressed and demoralized by feelings of helplessness when considering global problems?

The project has also compiled four pictorial booklets dealing with the issues of peace and conflict, ecological imbalance, human rights, and world affluence and poverty. Each is an anthology of pictures, quotations, games, activities, facts and arguments that can be used as starting points for discussion and further inquiry.

In addition, a handbook on the design of in-service courses, conferences and workshops has been published. Called *Debate and Decision: Schools in a World of Change*†, this outlines the methods and approaches the project has developed over the last few years, and suggests ways of helping teachers to clarify their aims and objectives; increase their theoretical understanding of methods and pedagogy; and develop their practical skills in the classroom. This handbook is intended not only for teachers, but also advisers, lecturers, members of HM Inspectorate, wardens and administrators. Underlying the content is the assumption that greater understanding and learning stem more readily from discussion among teachers themselves than from lectures, or talks by outsiders.

Organization and curriculum

The present activity of the project relates clearly to the themes of these publications. It aims to assist schools and teachers who are rethinking their organization and curriculum in the context of an interdependent world society. It is thus involved in and responds to requests for running sixth-form conferences, reassessing courses and materials with staff in particular school departments, and organizing workshops and courses at teachers centres and in colleges and universities.

Since world studies are rarely found as a separate subject in secondary school curricula, many of those with whom the project is associated are teachers of history, geography, social studies or religious studies. The area of reference is broad and has much in common with the fields of development education, social education, political education, education for international understanding and multicultural education. Indeed, the project frequently collaborates with the staff of organizations concerned with these areas. It retains, however, a distinct 'bottom-upwards' approach. The energy of its staff is directed towards listening to and then trying to provide appropriate support for teachers working on problems selected and defined by themselves.

Simon Fisher
World Studies Project
(24 Palace Chambers,
Bridge Street, London
SW1A 2JT)

* World Studies Project *Learning for Change in World Society: Reflections, Activities, Resources.* London: World Studies Project, 1976.

† World Studies Project. *Debate and Decision: Schools in a World of Change.* London: World Studies Project, 1979.

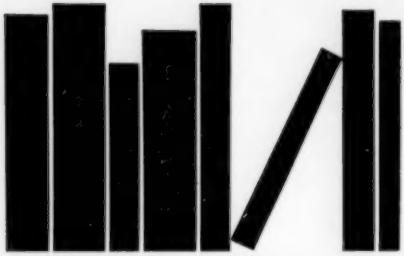
Basic education statistics

Public Sector in England and Universities in Great Britain

		Academic Years			
		1968–69	1976–77	1977–78	1978–79
Schools					
Nursery:	Number of schools	426	579	593	593
	Number of pupils (thousands)	30	48	49	49
Primary:	Number of schools	21,023	21,414	21,372	21,309
	Number of pupils under 5 (thousands)	216	384	367	380
	Number of pupils aged 5 and over (thousands)	4,304	4,387	4,275	4,138
	Pupil/teacher ratio	27·8	23·9	23·6	23·1
Secondary:	Number of schools	5,127	4,734	4,711	4,694
	Number of pupils (thousands)	2,781	3,799	3,851	3,872
	Percentage in comprehensives	24·9	79·3	83·4	85·9
	Pupil/teacher ratio	17·9	17·0	16·9	16·7
Special:	Number of schools	812	1,468	1,480	1,489
	Number of pupils (thousands)	73	122	124	123
School leavers:	Percentage with:				
	No GCE or CSE attempts	46·2	13·5	13·0	..
	5 or more higher grade O-level/CSEs(1), but no A-levels	8·1	9·2	9·3	..
	2 or more A-levels	12·1	12·4	12·6	..
Teachers	Full-time in maintained nursery, primary and secondary schools	283,059	408,393	410,808	414,628
	Part-time in maintained nursery, primary and secondary schools (full-time equivalent)	19,031	15,686	14,899	15,040
	Full-time in maintained and assisted further education establishments	48,174	69,522	69,990	71,202
	Part-time in maintained and assisted further education establishments (full-time equivalent)	..	..	..	14,800(6)
Major establishments of further education – total student enrolments (thousands)		1,853·3(2)	1,845·2	1,812·9	1,899·4(P)
of which					
Full-time and sandwich		347·0(2)	476·3	472·3	474·4(P)
of which, at polytechnics		..	111·1	115·7	117·6(P)
Part-time		1,506·3(3)	1,369·0	1,340·6	1,424·9(P)
of which, at polytechnics		..	78·2	81·3	84·7(P)
University full-time students in Great Britain (thousands)		211·5	271·8	280·5	288·4
Open University students in United Kingdom (thousands) – including short courses		..	67·4	80·3	80·4(P)
Participation in full-time education (as a percentage of age group)					
2–4 schools including assisted and independent(5)		11·7(5)	23·3	25·3	27·4
16–18 in schools including assisted and independent/colleges and universities		27·8(5)	29·8	29·9	29·8(P)
19–20 in further education/teacher training colleges		6·4(5)	8·1	7·5	7·1(P)
19–20 in universities (participation in Great Britain)		5·2	6·7	6·9	6·9
Expenditure (financial years)					
Total: at constant (1979 survey) prices £ million		5,639	7,529	7,345	7,472
as percentage of Gross National Product(4)		5·0	6·1	5·6	5·6

(1) O-level grades A–C and CSE grade 1. (2) England and Wales. (3) Each part-time pupil counted as one.
(4) UK public expenditure on education (including school meals and milk) as a percentage of the UK Gross National Product (at market prices). (5) Partly estimated. (6) Major establishments only. Figure estimated from sample survey.
(P) Provisional.

Detailed statistics of education (in seven annual volumes) are on sale at HMSO bookshops. Summary statistics (facts cards) relating to each of the seven volumes are available free on request from the DES Statistics Branch (Telephone 01–928 9222 ext 2776).



Book Reviews

The music club book of improvisation projects

Albert Chatterley
Galliard, Stainer and Bell £3·50 paperback

The ability to improvise has always been an important part of the musician's stock-in-trade. To their contemporaries, Bach, Handel, Mozart and Beethoven were as well known for their feats of extemporisation as for the excellence of their written compositions. Improvisation is an essential feature of most 'popular' music and fundamental to many non-Western forms of music-making. Surprisingly, the art of improvisation is seldom taught in our schools and colleges except to budding organists – even though some contemporary composers expect singers and instrumentalists to extemporize in the performance of their work.

Albert Chatterley's book is an attempt to promote improvisation in the classroom through an examination of available resources (which he identifies as 'armouries') and by outlining a whole range of sound projects likely to interest pupils of varying musical abilities. There is nothing solemn about this book and many of the projects are entertaining as well as instructive. In this respect, he has obviously benefited from nearly ten years' experience as producer of the popular BBC Schools Broadcast 'Music Club'.

This is essentially a source book; it abounds in information and ideas, but the teacher must ultimately decide exactly how to utilize this wealth of material as part of a systematic course. As some of the projects entail the construction of simple musical instruments, schools may find them a useful means of effecting fruitful cooperation between the music and craft departments.

The book, which is reasonably priced, is well illustrated with both line drawings and musical quotations, and contains discerning lists of books and recorded music for use in connection with the projects. It is clearly the work of one who has lost none of his conviction and enthusiasm as a teacher and consequently seeks to share his enjoyment of music with others.

PAT SALISBURY

Teaching French

R. J. Hares
Hodder and Stoughton £2·50 paperback

While this is a paractical book with many detailed suggestions, it must be said at the outset that it is not likely to be very helpful to the average teacher. Of its 108 pages of text only nine are devoted to 'General classroom and lesson procedure' and even these fail to deal adequately with the effective planning, organization and conduct of a lesson. A chapter on 'Mixed ability teaching' offers little help to the teacher for whom group-work is or seems impossible and, significantly, it skates over the problems of dealing with less able pupils. Indeed, the author himself states that 'There are many schools and pupils for whom much of what has been suggested in this and other chapters will be impossible'.

The author's basic assumption is that group-work will loom large in the teaching of French. For teachers committed to this there is a wealth of ideas and practical suggestions in the book, just as teachers seeking to devise and use workcards will find a great deal of practical help there. Advice is also given on the preparation and use of visual and taped materials and on classroom display and decoration.

In short, despite a number of stylistic inelegancies, this book will be of use to a number of teachers of French in primary and secondary schools.

M. V. SALTER

The reform of teacher education in the United Kingdom (Research into Higher Education Monographs 36)

James Lynch
Society for Research into Higher Education £5·75 paperback (£4·30 for members)

This is an intriguing book. The first reading offended me beyond measure, airing as it did a lament over the hardships that had been inflicted upon redundant tutors and a constant

interpretation of the facts to mean that the Establishment was determined to keep strict control over what knowledge could be considered as most worthy, favouring the middle-class universities with academic freedom and plenteous resources, whilst the maintained system was kept in poverty and subjected to close scrutiny. The book ends by saying that 'teacher education is variously seen as the handmaiden of either politics or the economy, rather than a pluralistic society's true servant in pursuit of the prosperity and harmony which seem even more elusive in British society in the late 1970s'. Perhaps a little bitterness has crept in under the disguise of the interpretation of research findings – I wonder whether the same conclusions are equally true (or untrue) for other professions.

If we disregard these we find here interesting trends and developments identified as a result of thorough assembling of data. There is a useful twenty-page bibliography and thirty-three pages of data to support the 146 pages of text. Evidence is quoted to show many lines of improvement in teacher education in the maintained system in the 1970s.

Chapter One describes how colleges became more self-governing following the Weaver Report after a long history of being held in the grip of central government, the Inspectorate ('tight fisted with power'), the universities and the LEAs.

Chapter Two takes us through the sixties and seventies with the introduction of degrees in education, expansion of numbers, the James Report encouraging a move to a new kind of validation. There is the big trend towards in-service training, the White Paper of 1972, the baby slump and contraction of output with consequent rationalization and reorganization.

The detailed story of the growth and influence of CNAA is told in Chapter Three. This leads on, in the next chapter, to a well documented account of the massive and rapid changes in curricula during the mid-seventies which have been 'fundamental, little understood, almost certainly underestimated changes in the structures of knowledge and the social relationships within which teachers are professionally socialised'. The direction of development is clearly pointing towards the provision of a more coordinated and effective professional education and the re-education of teachers.

Chapter Five tells how the old-fashioned school practice has been modified since the sixties using close circuit television, college-linked practice schools, team teaching in schools, consultation with teachers, the development of group practice, study practice and specific observational skills. Many trends are identified, including the pulling together of theory and practice and the freeing of professional work from such sterile academic dominance.

In the end we are told that the reform of teacher education is in a real sense part of the present and the future '. . . in many respects the reforms were necessary and have been very successful'. Among the attributes of the reform are rationalization of resources, new developments in diversified provision, more professionally relevant curricula, the integration of education in higher education and the lessening of the isolation of teachers in training. 'It is difficult to see what alternative institutional and systematic responses could have been formulated.'

Is all forgiven then; has the personal trauma been worthwhile? Not so, I suspect, in the author's mind until the great binary gulf is bridged and we have a great comprehensive higher education institution built upon the bridge. This book deserves careful reading – it will disturb the complacent and could serve as a stimulating basis for seminars on the interpretations of data.

A. G. CLEGG

Pre-school education in Western Europe: issues, policies and trends
Martin Woodhead (editor)
Council of Europe £4·50 paperback

This book is about the project on pre-school education that was initiated after the Sixth Conference of Ministers of Education in 1969 and culminated in the Strasbourg Conference in December 1979 to mark the International Year of the Child. It is very readable and should interest parents as well as professionals and administrators in the world of education.

In Chapter One, Martin Woodhead sets the scene for the work of the project, described in subsequent chapters, by considering the nature of pre-school education, its organization and development. In addition, he identifies the cultural, socio-economic and professional viewpoints in relation to the importance

of this phase of childhood. As these views differ from country to country, setting a 'Western European scene' in a relatively short book presents many problems. A synthesis composed of information on present practices and supporting research from a number of countries inevitably leads to distortion. Alternatively, giving examples of particular aspects of pre-school education from a number of member states leads the reader to make comparisons in a field which the author himself acknowledges to be fraught with difficulties. These are related to nomenclature and differing aims and expectations of services provided. This chapter reflects some of these difficulties.

Chapter Two deals with pre-school education for disadvantaged and handicapped children. The importance of research is acknowledged, and available findings are referred to where relevant. The wealth of such research evidence has enabled Martin Woodhead to adopt more of a research review style for this chapter. His acknowledgement that 'the selection and presentation of material has inevitably been influenced by my own outlook and experience of the topic', is more applicable here than is the case elsewhere in the book. The need to acknowledge and to adopt a liberal view of educational aims is expressed in this chapter.

This theme recurs in Chapters Three and Four, where issues from the symposia on pre-school education for children of migrant workers and for those who live in sparsely populated areas are identified. The theme of cooperation between pre-school education, parents and the community occurred in the Council's earlier work, but the work of the symposium on this subject is described in Chapter Five. The author sees cooperation with parents as vital in bridging the gap between home and community and school. The link between pre-school and primary education – the theme of the final symposium held in this country – is dealt with in Chapter Six. The differences in the statutory starting age among the member states, the patterns of government and local authority responsibilities, the training and status of professional staff provided a challenge for the delegates. Martin Woodhead, summing up the Council's work, can find no educational justification for treating pre-school as a separate sector: 'Psychological research does not provide evidence of a sharp division between successive stages in children's cognitive development which might justify the separation of pre-school from the primary sector'.

In the foreword the author warns his readership that 'the themes discussed in this report should not be considered exhaustive of relevant pre-school issues; nor should the recommendations be treated as conclusive. Rather the report should be seen as a starting point for the development of a pre-school education worthy of the children who are served by it'. One cannot but agree.

I. PERLMUTTER

Tasks and social relationships in classrooms. A study of instructional organization and its consequences

Steven T. Bossert

Cambridge University Press £9·00 hardback, £3·95 paperback

Steven Bossert is Assistant Professor of Sociology at the University of Michigan. He has, in common with many researchers, a distrust of 'black-box' investigations which explore classroom interaction in terms of input-output variables. Such studies have tended to emphasize personal variables within teachers and pupils or to assume that fixed-category scales can adequately classify social relationships and interaction within classrooms. Bossert suggests that the outcomes of education – a social activity – are influenced by the social organization and structural properties of the activity's setting. Bossert explores differences in the organization of classroom work and their effects on pupils' social interaction and responses.

The research was carried out in four classrooms in a university-operated private school in the United States. It involved intensive periods of observation and both informal and structured interviews with teachers and pupils. The method of sequential analysis used gave sufficient flexibility for events to be examined as they occurred.

The small sample and atypical population could possibly deter those who warm to a 'big-is-beautiful' concept for research. This is an intensive study with interesting features. It is heartening that Bossert does not attempt to re-invent the wheel but instead bases his research on an application of classic work by Homans. The role of the observer is interpreted more flexibly than in many studies. This book is primarily of interest to the

researcher: it is unlikely to find its way into many staffrooms. This is unfortunate for, although the research begs some questions, it is an honest and professional attempt to explore the heart of the matter in terms of educational provision.

S. GRACEY

Antonio Gramsci: conservative schooling for radical politics

Harold Entwistle

Routledge and Kegan Paul £7·95 hardback, £3·95 paperback

A supporter of classical education and disinterested enquiry; a believer in the necessity of good spelling and of examinations, and in hard and assiduous work; an opponent of what has become known as 'de-schooling', or notions of teaching under-privileged groups in restricted codes; possibly a man whose 'educational writing reads like a Black Paper forty years before its time'. The source of this hard-line orthodoxy was, in fact, none other than Italy's best-known Marxist theorist, Antonio Gramsci (1891–1937).

One of Gramsci's main contributions to social science and historiography was the concept of social hegemony. This is a refinement of the earlier Marxist doctrine that dominant classes repress exploited classes by force. Gramsci suggested that there was an equally powerful, but more subtle, class domination through culture, attitudes and assumptions. This concept underlies his educational theories. Briefly, he suggested that the working class could never bring about a successful revolution by force alone; it would have to be the cultural equal or superior of the capitalist class also. It followed that proletarian education would have to be as thorough and as disciplined as bourgeois education, and Gramsci repeatedly and strongly opposed all attempts to give proletarian children what he believed was second-best. Consequently he rejected the 1923 Education Law of Giovanni Gentile, paradoxically 'progressive' in style for fascist legislation.

Entwistle even suggests that what we might today term trendy or child-centred education could well be the friend of authoritarian government because it may nurture muddled and uninformed intellects. Gramsci saw the root of the matter when he realized that tough, disciplined and critical minds were the most effective guarantee against exploitation. Thus, he emphasized the virtues of a rigorous education, and of making efforts to become a well-informed citizen.

One half of the book attends to the school years, the other is divided between adult education and the vexed problem of connecting theory and practice in education. Although Gramsci addressed his work to the Italy of Mussolini's era, he grappled with difficult topics that exercise us still: where and when to start vocational or political education; how far to modernize the school curriculum, and by which criteria; what kind of educational organization would be most equitable and effective. There seems little aid and comfort in his writings for many contemporary educational radicals. He made no bones about the superiority of high culture over the 'folklore' of the people; neither was he persuaded that high culture was 'bourgeois' and flawed, rather he objected that only privileged groups had access to it.

Entwistle describes Gramsci's work with economy and clarity; his book has some penetrating insights into continuing problems, and it constitutes a further warning to those who impose stereotypes on the complex world of social theory.

R. A. S. HENNESSEY

The education of handicapped children in ordinary schools

The City of Bradford Metropolitan Council Educational Services Directorate

City of Bradford Metropolitan Council, free

This timely publication documents an investigation which covered 52,000 children from nine to eighteen in the Bradford Metropolitan District. The survey set out to provide information upon which to base future policies for educating handicapped children and young people in ordinary schools.

The first section details the scope and structure of the survey and defines handicap as any physical disease or condition which might interfere with a child's educational progress. Children exhibiting symptoms of disturbed behaviour, social deprivation and generalized learning difficulties were specifically excluded.

The questionnaire and the returns from the schools are included in the appendices.

Chapters on the incidence of handicap, the effects on classroom performance and factors

of ethnic origin, sex and attendance highlight the problems and question assumptions relating to the education of handicapped pupils in ordinary schools.

The publication states clearly that the identification of handicapped pupils does not necessitate separating them from other children, but urges that expert guidance and reassurance be given to teachers and parents.

The findings give cause for cautious optimism, and the report pays tribute to the children's education and 'the determined efforts by teachers, parents and children to overcome difficulties'. It is firmly based on the evidence and opinions of teachers in the schools; a similar exercise involving younger children should prove valuable.

The authors claim only to identify local needs: 'It would be unwise to assume that the conditions revealed by the survey are typical of any other area'. But the report does more than underline the value of local research. It contributes to the national debate on the educational provision for handicapped pupils in ordinary schools and will be of interest to most teachers.

D. W. JOHN

Making the grade: careers in FE teaching
Judy Bradley and Jane Silverleaf
NFER £7·50 hardback, £5·50 paperback

The number of full-time teachers in FE has multiplied by thirteen or more in less than a generation. This extraordinarily varied and variously employed body now faces reduced career opportunities, cuts, and low morale. Against this background the authors have studied a large sample (excluding those involved in adult education and youth work) of the profession: its background and composition; methods of appointment, promotion and professional structure; teaching and administrative activities and loads; the effects of the Burnham system and 'conditions of service'; staff development and in-service training. The book provides both factual evidence and teachers' perceptions of their experience.

A unique and fascinating profile emerges. A longer book could have clarified some problems by adding historical perspective. Yet this is also a source for continued and deeper analysis: do the unexpected proportions of staff with work experience and of ex-school teachers reflect misconceptions or structural change? Should we be concerned about grading and promotion criteria? Have the educational, organizational and financial effects of the 'points' system reached a level of absurdity that compels radical re-thinking? Is there some incongruity between the claim to professional status and rewards, on the one hand, and, on the other, the actual amount of work, personal study, training and research done by teachers, and their reasons for moving into FE? What is the relationship between fact, claim and perception on these and other issues?

The text suggests these and other fundamental questions, provides important information pointing to personal answers, and adds signposts for further enquiries. This book is, surely, essential reading for teachers, administrators and policy makers alike.

K. T. ELSDON

Primary questions
National Union of Teachers, free

This publication provides a welcome statement of the National Union of Teachers' response to *Primary Education in England* – the report of the survey by HM Inspectorate. The work of a specially convened working party set up by the Union's executive, it provides a detailed and thorough critique, commenting on the quality of the evidence and presenting the Union's view of the various recommendations contained in the report.

Primary questions is intended as a commentary on the findings of the survey and as such is best read alongside the original report. It welcomes particularly statements refuting the often uninformed criticisms of primary schools' behavioural standards and attainments in literacy and numeracy. The publication gives some constructuve advice on problem areas identified by HM Inspectorate. For example, in discussing science teaching, it expresses concern that so few schools have effective programmes for science studies and suggests ways in which the position may be improved.

A disappointing feature of *Primary questions* is that it adopts a traditional stance regarding the 'autonomy' of each primary class-teacher. Involvement in broader curricular planning and consultation and in the implementation and management of the curriculum can en-

rich the jobs of teachers in primary schools and teachers might be served best by a re-definition of their responsibilities to take account of this fact. At a time when school rolls are falling, more flexible deployment of teachers and recognition of the need to give appropriate curricular coverage and leadership, are likely to do more to improve staffing standards (when they can be achieved) than an over-reliance on the benefits of reduced class size.

An appendix to the publication deals with the different, but complementary, functions of parents and teachers in schools and with the professional responsibility and expertise which are required of the teacher.

Primary questions provides a straightforward and unequivocal statement of the NUT's views on a number of important educational issues and, therefore, will interest all concerned with the quality of education in primary schools.

S. A. Polak

Language, reading and learning

Asher Cashdan (editor)

Blackwell £8·95 hardback, £2·95 paperback

Asher Cashdan has done a valuable service in gathering together this series of chapters by different expert contributors. Teachers and others will find here a much-needed survey of current thinking about language in learning, together with many items of practical guidance. We are frequently reminded that children are active learners and that, consequently, we may have to modify and enlarge our views. There is a helpful chapter by David Crystal, on assessment and diagnosis, which links well with Denis Vincent's concluding chapter on standards and assessment; the message proclaimed is that a much more positive approach should be taken.

While teachers are reflecting on their own approach, they might also reconsider their methodology on the teaching of reading by noting Geoffrey Roberts' comments. His clearly presented thinking encourages an understanding of the relationship between learner and task. Lunzer and Dolan provide a timely reminder that less than adequate attention is paid to reading for learning in the secondary school. Their observation that the response to reading does not always have to be a piece of written work would certainly find support in the national secondary survey.

It is good to find that the editor has not neglected the place of literature, and Bernard Harrison's chapter should provoke reflection on this topic. There is sound practical advice for both primary and secondary teachers in the chapters by Elizabeth and David Grugeon and in that by Mike Torbe, who provides a sharp insight into language policy creation. It is a book for all phases of education and for all subject specialists.

John Hampson

Bearings in moral education. Australian Educational Review 12

Brian Crittenden

Australian Council for Educational Research 4·00 Australian Dollars

Bearings in moral education is described as a critical review of recent work. It considers a number of English philosophers, including Iris Murdoch, Geoffrey and Mary Warnock, R. S. Peters and Paul Hirst; it discusses the ideas of leading sociologists and psychologists such as Durkheim and Kohlberg; and it looks at curriculum planning and interdisciplinary approaches as exemplified by the Schools Council humanities and moral education projects and the Farmington Trust.

Brian Crittenden states that one of his major aims is to help teachers and others examine underlying issues more closely. He takes it as axiomatic that the proper approach to the field is philosophical. Consequently, not only is his method philosophical, but he emphasizes the ideas of other philosophers. A corollary of this is that the views of any writers with a religious background are almost completely ignored. This is unfortunate since one of the issues which deeply concerns many teachers is the relationship between faith and morality in an educational context.

It is not easy to identify the readership which the publisher is aiming to reach. The book reads like a series of lectures prepared for an impressionable group of masters' degree students. The critique of others' work, while quite clearly written and at times of some interest, tends to border on the obvious; while the summaries are insufficiently comprehensive to be of much value in themselves, and at times are very misleading. For example

Peters does not, as stated, accept the developmental sequence of Kohlberg.

The real problem, however, is that the author has few, if any, interesting insights of his own to offer. Consequently what he has to say seldom either stimulates or enhances understanding.

J. R. UNGOED-THOMAS

Learning to teach: teaching to learn
Gwynneth Dow
Routledge and Kegan Paul £8·50 hardback

The one-year post-graduate course of professional training has been established for many years and has been regularly scrutinized and criticized by tutors, teachers and students. This book describes in great detail such a course taught in an Australian university. The course is boldly innovative and broke tradition in Australia when it was introduced in 1973. Its design was the result of dissatisfaction with the traditional tripartite courses of education theory plus professional studies plus teaching practice.

The new course has a strong emphasis on 'methods', and theory is used to illuminate teaching problems experienced in schools. There is a continuous school experience for two days each week alongside work in the university. No terminal examination takes place; instead a judgement is made on whether each student is suitable for teaching. The major difference is not, perhaps, in course structure, although this was very new for Australia, but in the way in which the course operated. A serious attempt was made to negotiate with students, who participated fully in evaluation of the course and themselves, on a personal and professional level in both university and school. An in-depth study and diary are important writing assignments during the course, and the book is full of extracts from these, thus reflecting student reaction in an unexpurgated fashion.

The book is somewhat tedious to read as it is for the most part in diary form and in small type, giving blow-by-blow accounts of planning, staff meetings, interviews, schoolroom experiences and conversations. However, the overall impact is lasting and rings true; it represents a case study of the birth pangs and early life of a new approach to PGCE. It is written with great emotional and intellectual commitment by the lecturer in charge, and this is appropriate to a course designed to affect attitudes as much as to produce skills. It is a story of personal and professional commitment to a school-focused course.

A. G. CLEGG

A glossary for local population studies (second edition)
Leslie Bradley
Local Population Studies Society, £1·80 paperback (£1·92 by post)*

The audience for good, readable history (of the kind being written by Len Deighton, say, or Lady Antonia Fraser) is now very wide, and although popular historians will never make fortunes of Harold Robbins proportions, they can look forward to quite an enviable income. A few even manage to carve out quite a useful second career by acting as historical advisers to the makers of costume dramas for films or television.

Perhaps no one has been more surprised by the public demand for history than the professional historian himself, but the public demand is not always for reasons that he would be happy to accept. But are we expected to believe that none of us chooses history as a means of avoiding the present by escaping into the past?

One very welcome consequence of the current wave of popularity history enjoys is that many people are not content merely to read history; they want to become actively involved in it. There can be few adult education colleges nowadays that do not have a local history society or a family history group attached to them.

Historical demography, a small but growing interest, owes its impetus in this country, as Leslie Bradley rightly says in his introduction to his *Glossary*, largely to the Cambridge Group for the History of Population and Social Structure. The Group has recruited over the years many amateur historians and demographers to help with the collection of information from parish registers. As a result, historical demography in one guise or another has appeared in colleges and now in schools. It occupies an important place not only in many history departments, but in geography and sociology courses and in social studies.

* Obtainable from Miss E. O. Peach, Local Population Studies, Tawney House, Matlock, Derbyshire DR4 3BT.

But historical demography is a discipline with its own vocabulary and techniques. Leslie Bradley's *Glossary*, which deserves to be much better known than it is, is an attempt to help those who want to be able to read and understand the books the experts produce, or who would like to try out some of the techniques themselves. It defines common demographic and statistical terms – for historical demography is in part a statistical discipline – it lists the major primary sources and assesses their strengths and weaknesses, and it adds a bibliography and a number of useful addresses.

This second edition expands a little on the first. It gives in several cases fuller explanations, and it defines a few terms that were omitted from the earlier one. Better still, it now refers the reader to books and articles where he or she will be able to find more detailed explanations.

I recommend the whole enterprise highly. But would I advise those of you who happen to have the first edition to buy the second? Marginally, yes, I suppose so. But I must warn you. Since 1971 (the date of the first edition) and today, inflation has caught up with the *Glossary* and its price has risen from £0·40 to £1·80.

IAIN PATERSON

Preventing classroom failure: an objectives approach
Mel Ainscow and David A. Tweddle
John Wiley £7·50 hardback

This is a book which should be regarded as essential reading for all teachers of children with learning difficulties, wherever they are employed. Its authors, both with substantial experience in the field of special education, present a well-organized and succinctly argued case for a behaviourist approach to the problems of educational provision for that group of children frequently, though somewhat inaccurately, labelled as slow learners.

The publication of the Warnock Report, *Special Educational Needs*, has resulted in increased consideration of a broader concept of special educational provision and has provided a renewed opportunity to pose the question: What is special about special education? This book supports the concept that special education is appropriate education and suggests that in making provision for children with special needs attention should be focused on those factors within the teacher's control.

The authors emphasize the harmful effects of failure and of exposure to failure and stress the need for early intervention. They propose an objectives approach because they believe that: 'Slow learners need a teacher who has worked out in detail and in advance what she is going to teach, how she is going to teach it and how she is going to check that learning has occurred'.

A chapter on 'Objectives and the Special School Curriculum' describes how the authors' approach was used to develop the curriculum in a special school for children with learning difficulties, and demonstrates the invaluable element of in-service training inherent in an organizational procedure relying heavily on staff involvement in decision-making.

The book is well structured and its arguments are presented and developed in a logical fashion. It is very well indexed and contains many recommendations for further reading. Most importantly, it presents a humane approach to the problems inherent in the provision of opportunities for individualized learning in our schools.

T. HOWARTH

A basis for music education
Keith Swanwick
NFER £4·75 paperback

Professor Swanwick begins his book with the proposition that music has a meaning 'when people attend to it and when they understand the style or "norm" within which it operates' but insists that this 'meaning' cannot be dissociated from its emotional character. For music, he argues, 'straddles the affective and cognitive areas of experience by identifying, clarifying and structuring feeling.'

Since music invades so many aspects of life, the wise music teacher must first determine his priorities and then pursue them with singleness of mind. For Swanwick these essentials are composition, audition and performance (CAP), everything else being peripheral. The supportive role of what he calls literature studies (L) and skill acquisition (S) are, contrary to popular classroom belief, subordinate to these major elements; by combining the two mnemonics into C(L)A(S)P, the relationship between the components is

made clear. Repeatedly, the author insists that the absence of an aesthetic experience in the music lesson calls into question its whole educational purpose.

One chapter is devoted to 'creativity' in music and a number of popular misconceptions (eg its essential contemporaneity or its need to be a part of an integrated activity) are firmly challenged. The final chapter realistically examines certain social aspects of music education including the place of 'pop' within the classroom, the limiting effect of syllabuses and the need for some teachers to become bicultural in outlook. The book concludes with a strong justification of the aesthetic element in music education, seeing it as providing for pupils 'the means to feel more powerfully, to perceive more clearly'.

Although scholarly in approach and inclined to resort to complex diagrams in order to clarify his theses, much of Professor Swanwick's book is illustrated from common experience and expressed in forceful yet every-day language. It provides a salutary redefinition of the role of the music educator and deserves to be read widely.

PAT SALISBURY

Physical education for special needs
Lilian Groves
Cambridge University Press £6·95 hardback, £3·95 paperback

This book is a collection of contributions by physical educationists who in their different ways emphasize the importance of developing the abilities of young people whatever the nature of their disability. For the most part, terms of reference are defined and objectives clearly stated.

The first chapter opens with a quotation from Arnaud Reid: 'Sound education is the art of helping human beings of all ages to grow and develop to a fuller stature of mind, body and spirit and to live well in their world', which sets physical education within the context of total education.

Ensuing chapters are devoted to specific disabilities (mental retardation, physical handicap, visual and hearing impairment) and/or selected aspects of physical education (dance, outdoor pursuits, swimming, competition) and the final chapter is on integration. The chapter on swimming, which contains some excellent illustrations, usefully distinguishes between education and therapy.

The book does not claim to look in detail at all types of handicap, but there is a useful reference to the often overlooked clumsy child and certain of the more common physical handicaps. Throughout the book the emphasis is on a positive approach. Stress is placed on the importance of the acquisition of skill in terms of the resulting sense of achievement. In general, the contributors define their terms of reference and stipulate aims in a practical and positive manner. There are some useful lesson plans.

The editor has included a classified select bibliography, information about current films and a list of associations concerned, as well as a useful index.

All who are concerned with physical education, whether in the mainstream of education, special schools or further education, should find this publication of interest.

S. H. JOHNS

Philosophers as educational reformers: the influence of idealism on British educational thought and practice
Peter Gordon and John White
Routledge and Kegan Paul £9·95 hardback

The philosophers to whose acts and thoughts our attention is drawn are Oxford idealists. The authors attribute to their influence the main educational reforms of the years 1880–1910. Sandwiched between description and analysis of their work, we are given compressed but meaty insertions of educational history. This rather novel arrangement produces a slightly indigestible repast, but we recognize at once that great pains have been taken over its preparation. The philosophical chapters are generally lucid and the history highly personalized. Almost without exception the reformers are Oxford and predominantly Balliol men. In the words of an earlier scholar of Balliol they were:

> Souls tempered with fire
> Fervent, heroic and good,
> Helpers and friends of mankind.

Rugby Chapel was as much their Great Sacred Place as the halls of Balliol – new and old. Reform is shown to originate in the minds of such men and to germinate in their life and work. There is much to be learned about them

from a splendid set of group photographs. No Jowett, but T. H. Green is flanked by James Bryce in the 'Old Mortality Society' of 1858, A. H. D. Acland by Michael Sadler and C. G. Lang in 'The Inner Ring' of 1883: Morant towers above his fellow residents of Toynbee Hall in 1895: Gore is seen with his *Lux Mundi* associates amongst the roses in an Oxford rectory garden, 1902, and Tawney with his Rochdale tutorial class, 1907.

Time has not dealt too kindly with these pillars of church, state and cloister of learning, but the treatment they receive here is almost wholly sympathetic. Cut off from the common run of humanity by their breeding, their abilities, and in one or two instances by their ambition, they nevertheless valued their fellow human beings and strove on their behalf. The moral commitment they undertook and inspired others to share was that of active intervention in the affairs of the community. They gave their pupils ideals to live for and principles to live by. They upheld and extended the just claims of social democracy, but tempered their fervour with the nineteenth century belief (shared by Bertrand Russell in our own time) that civilization should not be sacrificed to egalitarian principles. In education their goal was the creation of a state-managed unitary system, inspired by a common sense of purpose, and conducted in accordance with a generally accepted orthodoxy of method and organization. That which they sought to create was all-embracing.

The achievements of the reformers here under review are plain to see. Not only were new universities brought into existence, but in essence the university of today is what they conceived a university to be, in itself and in its relationship to the state. They gave practical realization to the concept of second-chance higher education. They began the long pull to offer a suitably varied and extensive secondary education to all children and to the adolescents capable of accepting its disciplines. They helped to give dignity and a decent reward to teachers in the nation's schools. And yet from the end of the First World War their influence, in spite of Tawney and Temple, went into decline. All this is most usefully described by Gordon and White, but the final section of their book – 'The Idealist Legacy Today' – seems less satisfying. Their effort to clinch matters, to pull the threads together, may leave the reader somewhat bewildered.

Of course the society for which the education system of 1980 provides is not that of 1900. Opportunity for all can only mean educational diversity. The cult of individual self-realization cannot but lead to a weakening of social purpose. Historical events from 1914 onwards undermined the attractions of Hegelian and post-Hegelian visions of man and his society. Psychology, as the science of mind, has become of much greater significance to education than Darwinian evolution. Yet our past is in our present still – here and now and highly important to our continued existence. R. G. Collingwood's *Autobiography* is, as one would expect, quoted more than once in this book. Its authors might muse, perhaps, on that passage where one who was both historian and philosopher supposes that the past lives on in the present and that in such a situation 'the historian may very well be related to the non-historian as the trained woodman to the ignorant traveller. "Nothing here but trees and grass", thinks the traveller and marches on. "Look", says the woodman, "there is a tiger in that grass". The historian's business is to reveal the less obvious features hidden from the careless eye in the present situation.'

This book pursues an important theme with distinction and is a fruitful example of interdisciplinary cooperation. We are shown the wood and the trees, but as to whether it is Blake's heroic *Tyger* in the grass, or merely a tiger skin, we are left unsure.

DAVID HOPKINSON

Developments in the BEd degree course: a study based on fifteen institutions
Department of Education and Science/HMI Series: Matters for Discussion 8
HM Stationery Office £1·25 paperback

This study is the eighth in an important series of publications by HM Inspectorate that have taken up a range of topics, including highly specialized matters such as classics in comprehensive schools, and more general issues such as a secondary school survey of 'good schools'. This publication on the BEd degree is in the second category, containing as it does a broad analysis of current practice combined with a careful evaluation of the quality of the new BEd courses that have been developed following the James Report.

One of the major criticisms of teacher education in the sixties focused on the apparent obsession with quantity rather than

quality. The dramatic decline in the number of students has inevitably led to a closer scrutiny of the standard of teacher-education courses being provided. The HMIs conducting the current study have attempted to judge the quality of the courses by assessing the extent to which they appear to meet the needs of new teachers and the schools. HM Inspectorate has long and detailed experience of field visits and assessments.

The current publication, based upon visits throughout 1977 by visiting panels of about six inspectors to fifteen colleges, contains a lucid and extremely helpful analysis of the current state of the BEd degree. The publication is timely because a comprehensive picture has been difficult to obtain. Thus, even though the authors acknowledge that their visits were brief, that colleges were still in a stage of fundamental modification and were in any case at a very early stage in the new degree course, the survey will act as a most important reference point for the future studies that will take place in the eighties. It is also a contribution to the debate about priorities, both for initial training and for in-service education.

This fair and perceptive report contains many observations which will be of value to those who are now reviewing the operation of their BEd degree. At the same time, it raises problems of fundamental significance for teacher training which it is to be hoped can be the subject of another 'Matter for Discussion'.

JAMES PORTER
Director, Commonwealth Institute

Special educational needs
National Union of Teachers
NUT free

The NUT's response clearly endorses the philosophy of the Warnock Report and supports the majority of its recommendations. It is not drawn into contention about priorities, but sees the abolition of the categories of handicap as prerequisite to a sensitive definition of and response to special needs. It also agrees that detection and intervention with the under-fives, provision for those over sixteen and teacher training are extremely significant issues.

There is accord with the Committee's view of the scope of special education but not with the adequacy of a voluntary system of recording. An obligatory and uniform system of recording special needs is preferred as the basis for long-term plans to achieve a unified, coordinated service, regionally and locally.

While rejecting blanket testing for accountability, periodic screening for assessment and diagnosis is advocated. The concept of informed intervention, at all levels, is cardinal and it is because play-groups may lack expertise and support that they fail to find favour.

The concern for suitable expertise applies to all personnel involved in working with children and young people with special needs but, because of the centrality of their role, particularly to teachers. The place of a special educational component in initial teacher training is recognized. INSET is viewed as indispensable but not as a substitute for long courses. Certain reservations are expressed about the efficacy of distance teaching systems in this field.

There are manifest apprehensions about 'integration' and potentially adverse curricular outcomes. The Warnock Committee is sternly castigated for countenancing it without assurance of substantial resources, particularly staffing. The work of special schools receives a vote of confidence but reservations are held about the implementation of some of the recommendations made.

The pamphlet presents a critical appraisal of the potential and practicality of some of the Warnock proposals. It looks at the structure and quality of provision and concludes that if improvements are going to be effected then increased expenditure will be required.

R. M. GRIFFITHS

The school in question. A comparative study of the school and its future in Western Society
Torsten Husen
Oxford University Press £7·50 hardback, £3·50 paperback

A book on the central problems facing secondary education by none other than Torsten Husen and designed to offer both diagnoses and solutions to policy-makers (so the blurb says) – one can hardly wait.

It is sad to record, therefore, that the book is a disappointment. What would a policy-maker get from, say, the sections dealing with such tantalizing questions as 'Have standards declined?' or 'When should students of

differing ability be separated?'. Unfortunately, very little: mainly over-simplified, not always accurate descriptions of the well-known. Similarly, he would search in vain for answers and insights in the later chapters dealing with 'Preparation for life' and 'Reshaping the school for the next decades'.

Why, then, so many descriptions and so few answers? Perhaps it is because Husen really believes the claim he makes in the final paragraph – that his experience with policy-makers 'shows how meaningless it is to try to come up with sweeping recommendations . . . particularly . . . if they are not consistently related to the diagnosis conducted and to each other.' Unfortunately, if this has meaning, it effectively destroys the purpose of his book.

But perhaps he is right, in one sense. Geoffrey Mure used to say that philosophy progresses not by finding the answers but by progressively clarifying the questions. Husen certainly produces both clarity and questions. Further, we would accept Lord Bullock's assertion, in the preface, that 'if we do not find better answers to questions Torsten Husen has asked, we are likely to find the issues they raise amongst the most explosive on the political agenda of the future.' At last, a little nearer reality. The trouble is that we've known this for a long time: what we now need are one or two answers.

T. W. F. ALLAN

Fit for work? Youth, school and (un)employment
Colin and Mog Ball
Chameleon Books £4·95 hardback, £1·95 paperback

This little book is remarkable for its crisp and clear writing, and its sympathetic concentration on young school leavers' problems, which are frequently illustrated by their own comments. Like the other books in the Chameleon series, *Fit for work?* is intended to open up and add to debate on some of the most important and difficult topics in education. The authors have both been teachers. One of them has also worked with the Manpower Services Commission and as consultant at the Home Office Voluntary Services Unit.

The book points out the restrictions implicit in current roles of young people, the dominance of institutions, including schools, and the limitations of institutional action. It strongly suggests that society should encourage alternative ways of meeting young people's real needs, expecially through doing, learning, enjoying and participating at first hand.

In the course of their review of existing provision, the authors are critical of the structures and policies of government departments and professional bodies, including the Department of Education and Science and HM Inspectorate. The Careers Service is seen as perpetuating dependence on institutions and second-hand advice.

In some passages the book's sheer brevity and trenchant comment are less than satisfying. For instance, more could have been said about unified vocational preparation; and the professional problems of teachers, careers officers and education administrators need to be seen in the wider context of current educational and social philosophies.

Nevertheless, the book's heart is in the right place. There is wisdom in the authors' determination to view the problems of transition from full-time study to work as part of the much larger process of growth and development of young people from children into adults. There is useful material here for discussion, not only about the problems of young people, but also about concepts of work, training and education, the individual in society, and the respective roles of central and local government.

P. F. SMART

ADDITIONAL BOOKS RECEIVED

ALEXANDER, MARC. *The mist lizard.* Piccolo, £0·75.

ALLEN, DAVID. *English teaching since 1965: How much growth?* Heinemann Educational Books, £4·25.

ASHCROFT, P. J. and N. J. COOPER. *Technician fluid dynamics 1.* Cassell, £4·50.

ATHERTON, MICHAEL, BRIAN JONES and DAVID MCCULLOUGH. *Combined science 3.* John Murray, £2·60.

ATHERTON, MICHAEL, BRIAN JONES and DAVID MCCULLOUGH. *Combined science* 3 (*teachers' guide*). John Murray, £1·95.

BALDWIN, DOROTHY. *It's a great life.* BBC Publications, £1·10.

BARROW, ROBIN. *Happiness.* Martin Robertson and Company Ltd., £10·00 (£3·95 paperback).

BELL, PETER B. and BRIAN L. GALLAGHER. *Subject scope.* CRAC/Hobsons' Press, £1·40

BENNETT, N. and DAVID MCNAMARA. *Focus on teaching.* Longman, £6·50.

BLACKHAM. H. J. (editor). *Education for personal autonomy: an enquiry into the school's resources for furthering the personal development of pupils.* Bedford Square Press, £4·95 (£2·95 paperback).

BOOTON, FRANK and ALAN DEARLING. *The 1980s and beyond: The changing scene of youth and community work.* National Youth Bureau, £2·95.

BRADLEY, A. and KAY JAMIESON. *Dandelion clocks. Stories of childhood.* Penguin Books Ltd., £1·25.

BRENNAN, W. K. *Curricular needs of slow learners.* Evans/Methuen Educational, £6·10.

CARRUTHERS, CHRISTINE. *Social biology.* University Tutorial Press, £3·25.

CHASE, LESLEY. *Jill Graham and the adventure of the man who vanished.* Piccolo, £0·75.

CHASE, LESLEY. *Jill Graham and the secret of the silent pool.* Piccolo, £0·75.

CLARK, M. M. and W. M. CHEYNE. *Studies in pre-school education.* Hodder and Stoughton, £5·95.

CLISH, DOUGLAS (editor). *Teaching science.* National Book League, £2·00 (members £1·70).

CLOSE, SYLVIA. *Birth Report.* NFER, £5·95.

COMMITTEE OF DIRECTORS OF POLYTECHNICS. *Polytechnic courses handbook 1980–81.* Lund Humphries (24a Litchfield Street, London WC2 9NH), £4·25.

CORBISHLEY, M. J. *Archaeological resources handbook for teachers.* Council for British Archaeology, £2·50.

COUNCIL OF EUROPE. *Your town, your life, your future.* Council of Europe, free.

CRONE, ROBERT and JOHN MALONE. *Continuities in Education: the Northern Ireland Schools Curriculum Project.* NFER, £5·95.

CROWLEY, TONY. *Job quiz book 3.* Hobson's Press, £0·65.

DEBOYS, MARY and EUNICE PITT. *Lines of development in primary mathematics.* Blackstaff Press, £6·95.

DEPARTMENT OF EDUCATION AND SCIENCE/WELSH OFFICE. *A framework for the school curriculum,* free.

DEPARTMENT OF EDUCATION AND SCIENCE. *Mathematical Development, Primary Survey Report No. 1* (APU). HM Stationery Office, £5·00.

Dinosaurs and their living relatives (written by staff of the Natural History Museum, London). Cambridge University Press, £9·00.

DOBSON, A., L. E. INGARIELLS, A. MAYS and S. M. ROWE. (editors). *The Spanish colloquium.* Centre for Information on Language Teaching and Research, £2·25.

DOCKRELL, W. B. and DAVID HAMILTON. (editors). *Rethinking educational research.* Hodder and Stoughton, £9·95.

DOWNING, JOHN. *Reading and reasoning.* Chambers, £7·00.

DUFFOT-SMITH, PETER. *Practical astronomy with your calculator.* Cambridge University Press, £9·50.

EDWARDS, JOHN R. *Language and disadvantage.* Edward Arnold, £5·50.

EXTERNAL SERVICES TEAM, LEICESTERSHIRE LIBRARIES AND INFORMATION SERVICE in association with LEICESTERSHIRE EDUCATION DEPARTMENT. *Education in Leicestershire: a bibliography.* Leicestershire County Council, £3·00.

FACULTY OF TEACHERS IN COMMERCE LIMITED. *Teacher in commerce.* Winter 1980. Annual subscription, £1·25.

FEINSTEIN, KAREN WOLK (editor). *Working women and families. Volume 4.* Sage, £6·25.

FINNISTON REPORT, DEPARTMENT OF INDUSTRY. *Engineering our future* (Report of the Committee of Inquiry into the Engineering Profession, chaired by Sir Monty Finniston) HM Stationery Office, £5·00.

FORSYTH, J. P. and W. B. DOCKRELL. *Curriculum and assessment: the response to Munn and Dunning.* Scottish Council for Research in Education, £0·60.

FRENCH, H. W. *Technical engineering drawing.* Cassell, £3·95.

GALTON, MAURICE, BRIAN SIMON and PAUL CROLL. *Inside the Primary Classroom.* Routledge and Kegan Paul, £8·95 (£4·95 paperback).

GATHORNE-HARDY, JONATHAN. *The public school phenomenon.* Penguin, £2·95.

GILBERT, RICHARD. *Young explorers.* G. H. Smith and Son, £6·00.

GLADSTONE, FRANCIS. *Voluntary action in a changing world.* National Council of Social Services, £3·95.

GLEESON, DENIS and GEORGE MARDLE. *Further education or training?* Routledge and Kegan Paul, £9·50.

GOLDSMITH, BRIAN C. *Design data for wheelchair children.* Disabled Living Foundation, £4·50.

GOODLADY, SINCLAIR. *Learning by teaching.* Community Service Volunteers, £2·75.

GREANEY, VINCENT (editor). *Studies in reading.* The Educational Company, £2·53.

GREATWOOD, E. A. and P. BIESTERFELDT. *Lernen Sie Deutsch. Book* 2. Cassell, £5·15.

HALL, JEREMY. *How to pass examinations in data processing.* Cassell, £2·50.

HALSEY, A. H., A. F. HEATH and J. M. RIDGE. *Origins and destinations: family, class and education in modern Britain.* Clarendon Press, £11·00.

HAMBLIN, DOUGLAS H. *The teacher and pastoral care.* Blackwell, £8·50 (£4·25 paperback).

HARRIS, PETER (editor). *Teaching history in schools.* National Book League, £0·90 (members £0·60).

HAYWARD, CHRISTINE. *A fair assessment. Issues in evaluation coursework.* Central Council for Education and Training in Social Work, £2·50.

HEALY, MAURA and MICHAEL MARLAND (editors). *Language across the curriculum.* National Book League, £0·90 (members £0·60).

HEATER, DEREK. *World Studies. Education for International Understanding in Britain.* Harrap, £5·95.

HM SERIES: Matters for Discussion 11 *A view of the curriculum,* HM Stationery Office, £1·50.

HM INSPECTORATE. *Aspects of secondary education in England: a survey by HM Inspectors of Schools.* HM Stationery Office, £6·75. *Supplementary information on mathematics.* HM Stationery Office, £1·90.

HILLS, N. D. C. *Preparing educational materials.* Croom Helm, £9·50.

HINTON, MICHAEL. *Comprehensive schools: a Christian's view.* SCM Press, £2·50.

Hobson's engineering casebook. CRAC/Hobson's Press, free.

HOLT, MAURICE. *The common curriculum.* Routledge and Kegan Paul. £3·50 paperback.

HUGHES, MAYALL, MOSS PERRY, PETRIE and PINKERTON. *Nurseries now: A fair deal for parents and children.* Pelican Books. £1·95.

HULL, PENNY (editor). *Electricity, consumers and conservation: resource list for teachers.* Electricity Consumers' Council, free.

HURREN, H. A., J. W. COUTTS and B. S. FITZJOHN (editors). *A guide to language courses in polytechnics and similar institutions 1980 and 1981.* Centre for Information on Language Teaching and Research, £2·00.

INDUSTRY/EDUCATION UNIT AT THE DEPARTMENT OF INDUSTRY. *A short guide to industry – education links.* Department of Industry, free.

INDUSTRY/EDUCATION UNIT AT THE DEPARTMENT OF INDUSTRY. *Case studies of industry/education links. A selection of local initiatives to encourage a better understanding of industry.* Department of Industry, free.

JEFFS, ANTHONY J. *Young people and the Youth Service.* Routledge and Kegan Paul, £7·50.

KARMEL, PETER. *Youth education and employment.* Australian Council for Educational Research, 2·00 Aust. dollars.

JOHNSON, DAPHNE, ELIZABETH RANSOM, TIM PACKWOOD, KATHERINE BOWDEN and MAURICE KOGAN. *Secondary schools and the welfare network.* Unwin Educational Books, £8·50 (£3·95 paperback).

LAWSON, K. H. *Philosophical concepts and values in adult education (revised edition).* Open University, £3·95.

LEACH, PENELOPE. *Baby and child.* Penguin, £4·95.

LEEMING, KEN, WILL SWANN, JUDITH COUPE and PETER MITTLER. *Teaching languages and communication to the mentally handicapped (Schools Council Curriculum Bulletin 8).* Evans/Methuen Educational, £13·75 (£9·25 paperback).

LOVELL, R. BERNARD. *Adult learning.* Croom Helm, £9·95.

MCALPIN, JANET. *Practical Language Teaching 3.* The Magazine Picture Library. George Allen Unwin, £2·50.

MARKOVA, A. K. *The teaching and mastery of language.* Croom Helm, £12·95.

MARSH, PETER, ELIZABETH ROSSER and ROM HARVE. *The rules of disorder.* Routledge and Kegan Paul, £2·95.

MEADOWS, R. G. *Technician engineering science 3.* Cassell, £4·75.

MEDAWAR, P. B. *Advice to a young scientist.* Harper and Row, £4·95.

MODGIL, SOHAN and CELIA. *Towards a theory of psychological development.* NFER, £19·95.

MORGAN, DAVID and LINDA MCDOWELL. *Patterns of residence: costs and options in student housing.* Clark, Doble and Brendon, £7·00.

MORGAN, GEORGE. *A criterion-referenced measurement model with corrections for guessing and carelessness.* Australian Council for Educational Research, 5·00 Aust. dollars.

MORRISON, C. M. *Open plan secondary schools.* Scottish Council for Research in Education, £0·70.

MOSS, ELAINE. *The audience for children's books.* A3 Litho Ltd., £0·50.

MUGGLESTONE. *Practical Language Teaching 1. Planning and using the blackboard.* George Allene Unwin, £2·50.

MUSGROVE, FRANK. *School and the social order.* John Wiley, £10·75.

NATIONAL EXTENSION COLLEGE. *Helping hand.* National Extension College, £0·50.

PAGE, M. G. *Technician mathematics 3.* Cassell, £4·95.

PALMER, J. R. and B. A. J. SHAW. *Chemistry explained.* University Tutorial Press, £3·15.

PERKINSON, HENRY J. *Since Socrates. Studies in the history of western educational thought.* Longman Group, £4·95.

PERROTT, Professor E., D. HUGHES-EVANS and I. D. CAMPBELL. *Resource book of test items in biology.* John Murray, £3·95.

PIPER, KEVIN. *Curriculum style and social learning.* Australian Council for Educational Research, 10·00 Aust. dollars.

PLUCKROSE, HENRY. *Children in their primary schools.* Penguin, £1·25.

PRICE, R. F. *Education in modern China.* Routledge and Kegan Paul, £3·95.

PRIESTLEY, BARBARA (editor). *British qualifications (10th edition). A comprehensive guide to educational, technical, professional and academic qualifications in Britain.* Kogan Page, £13·50.

PUGH, GILLIAN (editor). *Preparation for parenthood.* National Children's Bureau, £2·85 (members £1·95).

RICHARDS, T. B. *How to pass examinations in economics.* Cassell, £3·10.

RIDOUT, RONALD. *The Pan spelling dictionary.* Pan, £1·50.

ROLFE, JOHN *et al. Contrasts in development.* Oxford University Press, £2·50.

ROLFE, JOHN *et al. European patterns.* Oxford University Press, £2·25.

ROLFE, JOHN *et al. The local framework.* Oxford University Press, £2·25.

RUBINSTEIN, DAVID (editor). *Education and equality.* Penguin, £2·50.

RUTLAND, JONATHAN. *Exploring the violent earth.* Piccolo, £0·60.

RUTLAND, JONATHAN. *Exploring UFOs.* Piccolo, £0·60.

RYRIE, A. C., A. FURST and M. LAUDER. *Choices and chances: a study of pupils' subject choices and future career intentions.* Hodder and Stoughton, £4·00.

SCHOOLS COUNCIL. *Learning through talking 11–16.* Evans/Methuen Educational, £5·25.

SCHOOLS COUNCIL. *Mathematics teaching in schools: evidence from the Schools Council to the Committee of Inquiry into the Teaching of Mathematics.* Schools Council (Central Dispatch Section) free.

SCHOOLS MATHEMATICS PROJECT. *Revised advanced mathematics.* (Answers and hints for book 3). Cambridge University Press, £5·50.

SHARMAN, KEVIN. *Children's television behaviour: its antecedents and relationship to school performance.* Australian Council for Educational Research, 5·00 Aust. dollars.

SHELLERD, JOHN S. (editor). *Educational research for policy making in Australia.* Australian Council for Educational Research, 10·00 Aust. dollars.

SOCIETY FOR RESEARCH INTO HIGHER EDUCATION. *Decade of change.* Direct Design, £4·20.

STACE, ALEXA. *Careers in secretarial and office work.* Kogan Page, £4·95 (£1·95 paperback).

STENHOUSE, LAWRENCE (editor). *Curriculum research and development.* Heinemann Educational, £10·95 (£5·95 paperback).

STEVENS, AURIOL. *Clever children in comprehensive schools.* Penguin Books Ltd., £1·25.

STRATHCLYDE REGIONAL COUNCIL. *Room to grow. Report on child care services.*

STRATHCLYDE REGIONAL COUNCIL. *Social work services for the mentally handicapped in Strathclyde. Report of Council's Social Work Committee.*

TEACHER EDUCATION STUDY GROUP. *Professional studies for teachers.* Teacher Education Study Group/Society for Research into Higher Education, £2·90.

TAYLOR, FELICITY. *View from the sixth. A guide to university, polytechnic and college open days, visits and conferences for sixth-form students.* Kogan Page, £4·95.

THOMAS, G. H. *Design technology in metal and plastics.* John Murray, £2·95.

TOCH, H. *How to pass examinations in taxation.* Cassell, £2·50.

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